● If you wish to eliminate mica and other dusting powders you should try

VANFRE

It is a liquid developed for coating rubber prior to curing in a lead jacket. Apply as a dip, spray or by brushing.

R. T. VANDERBILT CO., Inc.

230 Park Avenue, New York 17, N. Y.

R·T·VANDERBILT CO·N·Y·U·S·A·
AMERICAN PRODUCTS

New Accelerator for NEOPRENE and NEOPRENE LATEX

Du Pont NA-11

Readily dispersed...economical...safe

NA-11 fills the demand for a vulcanization accelerator for neoprene compounds which combines safety in processing with strong activation at curing temperatures. It is effective in all types of neoprene.

With NA-11, neoprene compounds can be vulcanized to a high state of cure without sacrificing efficiency in the utilization of curing equipment. This high state of cure results in optimum properties in the vulcanizate, such as: low compression and permanent set, high resilience, maintenance of original characteristics upon aging, and resistance to stiffening at low temperatures.

NA-11 is one of the best accelerators for neoprene latex compositions. It is particularly suited for binders for bonded hair and fibrous products; for industrial gloves, metal coatings, and foam latex products made from neoprene or blends of neoprene with other latices.

More complete information on NA-11 is contained in Report 47-5. If you have not already received your copy, one will be sent on request. Write to: E. I. du Pont de Nemours & Co. (Inc.), Rubber Chemicals Division, Wilmington 98, Del.

• • •

Tune in to Du Pont "Cavalcade of America," Monday nights—8 p. m. EST, NBC

DU PONT RUBBER CHEMICALS

E. I. du Pont de Nemours & Co., (Inc.), Wilmington 98, Del.

BETTER THINGS FOR BETTER LIVING ...THROUGH CHEMISTRY

DU PONT

REG. U.S. PAT. OFF.

THE RUBBER AGE, published monthly by The Palmerton Publishing Co., Inc., Printing Office, East Stroudsburg, Pa. Editorial and Advertising Offices at 250 West 57th Street, New York 19, N. Y. Entered as second class matter October 20, 1933, at the Post Office at East Stroudsburg, Pa., under the Act of March 3, 1879. Subscriptions in United States, $3.00 a year; Canada, $3.50; Foreign, $4.00. October, 1947. Vol. 62, No. 1.

PUBLIC L ARY
NOV 1
DETR

SUPERB OIL RESISTANCE

is only one of Hycar synthetic rubber's unusual and valuable properties. Others are listed in the box at the right.

But most important, these properties may be had in an almost limitless number of combinations, each designed to meet specific service conditions of the finished Hycar part.

Our files contain more than 5000 recipes for Hycar compounds—each compound engineered to do a certain job. Parts made from HYCAR have seen service in *every* industry, giving long life, dependability, and economical operation.

That's why we say, ask your supplier for parts made from Hycar. Test them in your own application, difficult or routine. You'll learn for yourself that it's wise to use HYCAR for long-time, dependable performance. For more information, please write Department HB-10 B.F. Goodrich Chemical Company, Rose Building, Cleveland 15, Ohio.

CHECK THESE SUPERIOR FEATURES OF HYCAR

1. EXTREME OIL RESISTANCE — insuring dimensional stability of parts.
2. HIGH TEMPERATURE RESISTANCE—up to 250° F. dry heat; up to 300° F. hot oil.
3. ABRASION RESISTANCE—50% greater than natural rubber.
4. MINIMUM COLD FLOW—even at elevated temperatures.
5. LOW TEMPERATURE FLEXIBILITY—down to —65° F.
6. LIGHT WEIGHT—15% to 25% lighter than many other synthetic rubbers.
7. AGE RESISTANCE—exceptionally resistant to checking or cracking from oxidation.
8. HARDNESS RANGE—compounds can be varied from extremely soft to bone hard.
9. NON-ADHERENT TO METAL—compounds will not adhere to metals even after prolonged contact under pressure. (Metal adhesions can be readily obtained when desired.)

Hycar
Reg. U.S. Pat. Off.
American Rubber

B. F. Goodrich Chemical Company
A DIVISION OF THE B. F. GOODRICH COMPANY

This advertisement appeared in a long list of carefully selected business papers TO HELP YOU SELL parts made from HYCAR.

Girth Control WITH PHILBLACK-A

Yes! Philblack-A will help "hold the size" of your extruded products. We don't need to point out, when tolerances are small, why this quality is so necessary. But we would like to emphasize that there are other important advantages gained by using Philblack-A, in comparison with other carbon blacks.

For instance . . . Philblack-A helps you lower costs . . . saves stock by tubing to closer limits with less fear of defectives due to uneven shrinkage . . . saves time because of faster tubing speeds . . . saves rejections through better appearance of the finished product.

Try this modern furnace black, yourself. Yes, you can use it with either synthetic or natural rubber . . . with marvelously good results!

PHILLIPS PETROLEUM COMPANY

Philblack Division

EVANS SAVINGS AND LOAN BUILDING · AKRON 8, OHIO

Floors to Last a Lifetime

Another interesting application of GEON polyvinyl materials

THE maker of that floor in the picture won't say so—he says people wouldn't believe him. But chances are the floor will last a long lifetime. It's a new kind of tile—a plastic made from one of the GEON polyvinyl resins.

It's another case of selecting the *right* material for a given job. In this busy airlines ticket office the floor takes a terrific beating from morning till night. It has to resist wear, aging, sunlight, dirt, water, and many other normally destructive elements. It must clean easily, and stay fresh looking and attractive.

GEON resins can be compounded to provide these and many other properties in an amazing number of combinations to meet specific service conditions.

And they may be processed in many different ways—extruded, calendered or cast into sheet or film, pressure or injection molded. In latex or solution forms, GEON may be used to coat and impregnate fabrics, paper, and cardboard. Products made from GEON resins may be flexible or rigid—clear or opaque—brilliantly or delicately colored.

While we make no finished products from GEON or any other raw materials manufactured by B. F. Goodrich Chemical Company, we'll be glad to work with you on any special problems or applications. For more information, write Dept. R-10 B. F. Goodrich Chemical Company, 324 Rose Building, Cleveland 15, Ohio.

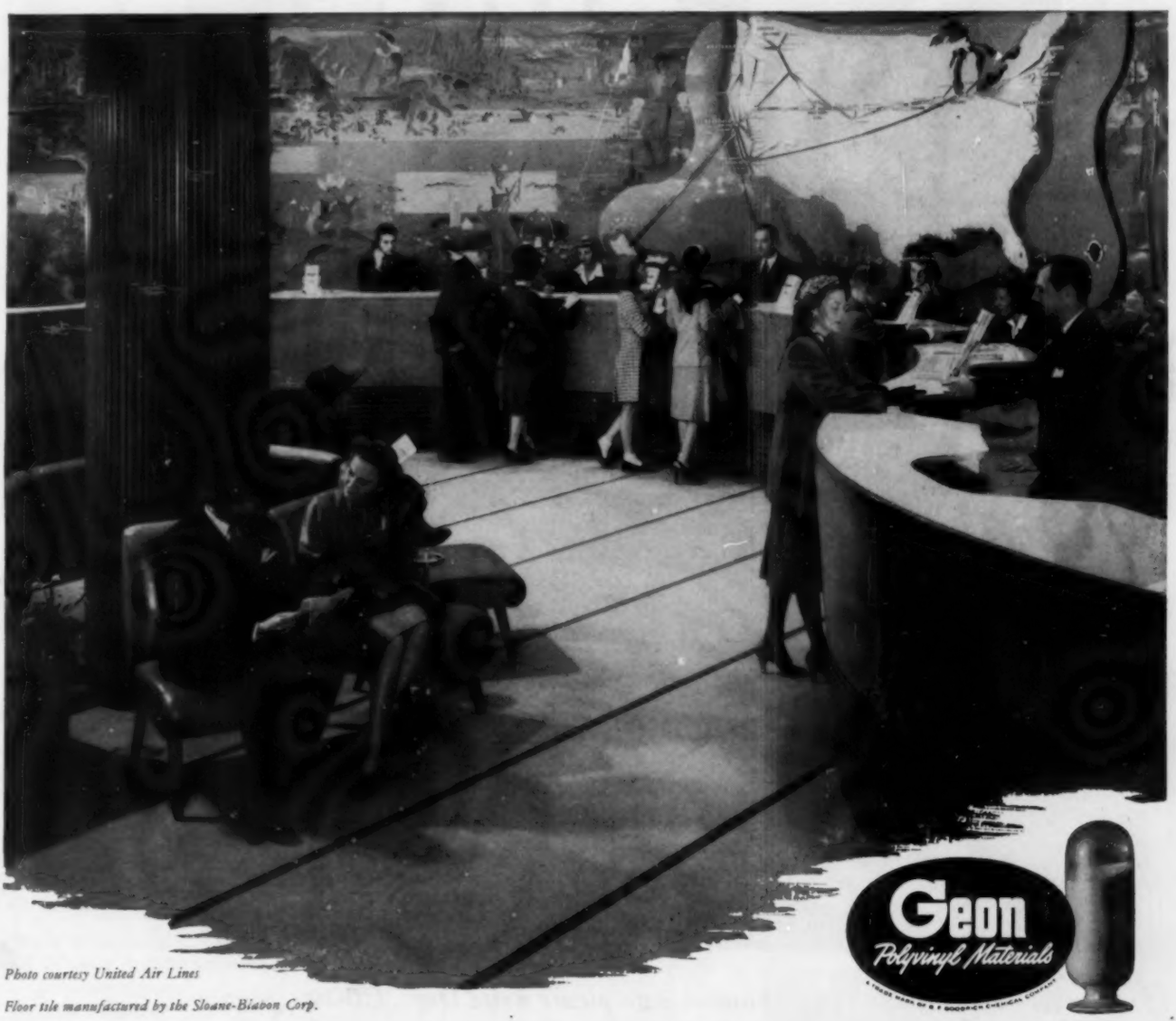


Photo courtesy United Air Lines

Floor tile manufactured by the Sloane-Blabon Corp.

B. F. Goodrich Chemical Company A DIVISION OF THE B. F. GOODRICH COMPANY

GEON polyvinyl materials • HYCAR American rubber • KRISTON thermosetting resins • GOOD-RITE chem'cals

Good-rite
VULTROL
for use in American rubber compounding
to prevent scorching, and for recovering
scorched stocks
GOOD-RITE AND VULTROL REG T M U S PAT OFF

For technical data please write Dept. CB-10

B. F. Goodrich Chemical Company

A DIVISION OF
THE B. F. GOODRICH COMPANY

ROSE BUILDING, CLEVELAND 15, OHIO

GEON polyvinyl materials • HYCAR American rubber • KRISTON thermosetting resins • GOOD-RITE chemicals

"Flexol"

Trade Mark

PLASTICIZERS

"FLEXOL" PLASTICIZERS are designed to meet industry's expanding needs for products with good general characteristics such as compatibility and low volatility. In addition, each "FLEXOL" PLASTICIZER is outstanding in producing one or more special properties such as low-temperature flexibility, resilience, or high impact strength.

"FLEXOL" PLASTICIZERS are successfully serving industry in lacquers, artificial leathers, vinyl films and sheetings, vinyl butyral safety glass, and molded and extruded products based on the vinyl resins and cellulose derivatives.

The "FLEXOL" PLASTICIZERS shown are in commercial production. Several more are available in research or development quantities. Consult us on availability.

Our laboratories have prepared extensive data on the performance of the "FLEXOL" PLASTICIZERS for many uses. This information will assist you in selecting the right "FLEXOL" PLASTICIZER or mixture of plasticizers for your needs.

A booklet on the general function of plasticizers and the specific uses of "FLEXOL" PLASTICIZERS, *Form-5882, may be of help in your application. Phone or write our nearest office for this booklet or for samples and prices.*

COMPATIBILITY OF "FLEXOL" PLASTICIZERS (20% OF COMPOSITION) WITH VARIOUS RESINS

	DOP	3GH	3GO	4GO	TOF	B-400	8N8
Vinyl Acetate	I	C	SI	C	C	I	C
Vinyl Butyral	C-L	C	C-L	I	C	I	C
Vinyl Chloride	C	C	C	C	C	I	C
Vinyl Chloride-Acetate	C	C	C	C	C	I	C
Cellulose Acetate	I	I	I	I	SI	I	I
Cellulose Acetate-Butyrate	C	C	C	SI	SI	I	—
Cellulose Nitrate	C	C	C	C	C	C	C
Ethyl Cellulose	C	C	C	C	C	I	C
Synthetic Rubbers	C	C	C	C	C	I	C

C—Compatible I—Incompatible S—Slightly L—Plasticizer sweats out

"Flexol" is a registered trade-mark of Carbide and Carbon Chemicals Corporation.

CARBIDE AND CARBON CHEMICALS CORPORATION

Unit of Union Carbide and Carbon Corporation

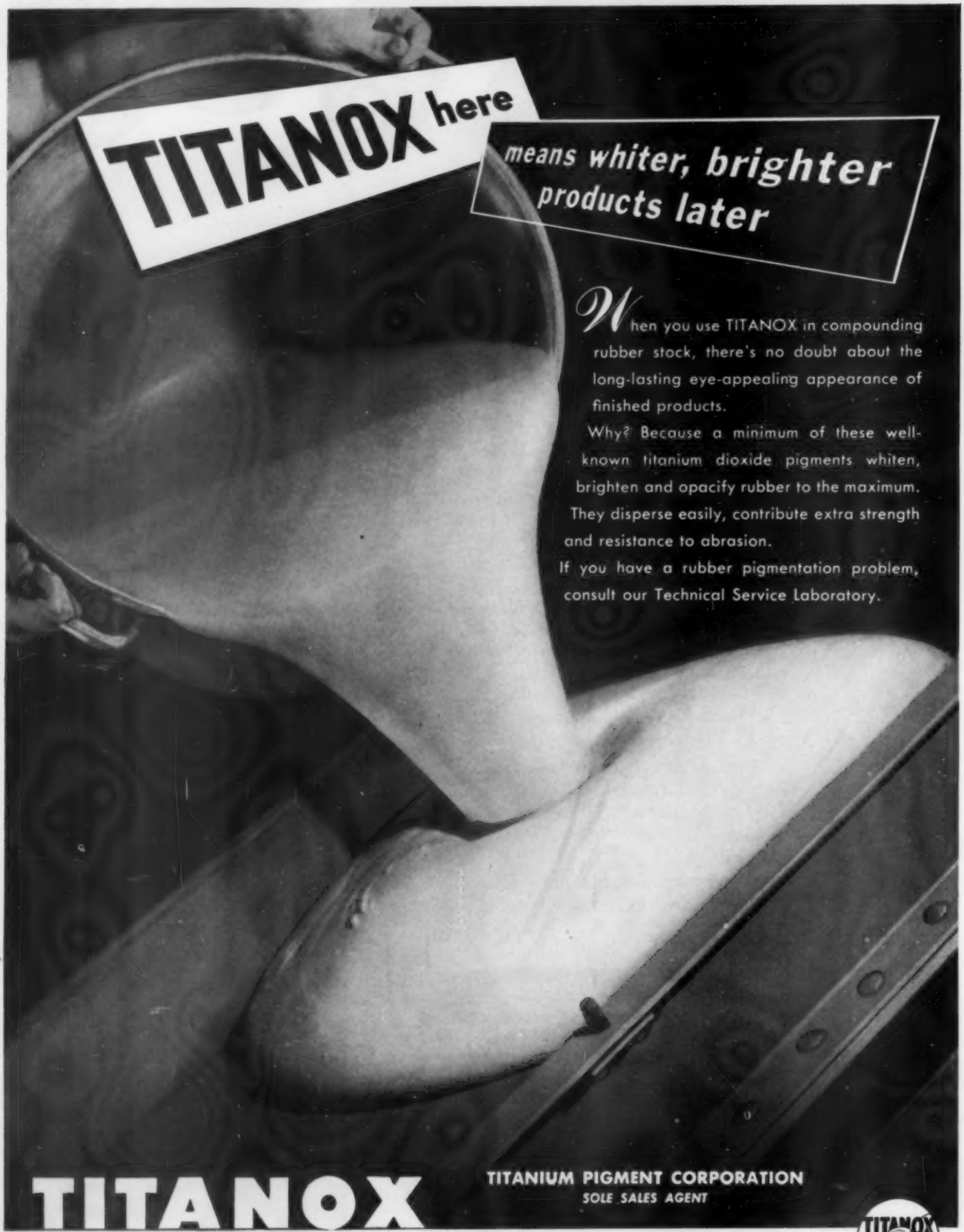
30 East 42nd Street New York 17, N. Y.

Offices in Principal Cities

In Canada:

Carbide and Carbon Chemicals, Limited, Toronto

TITANOX . . . *the brightest name in titanium pigments*

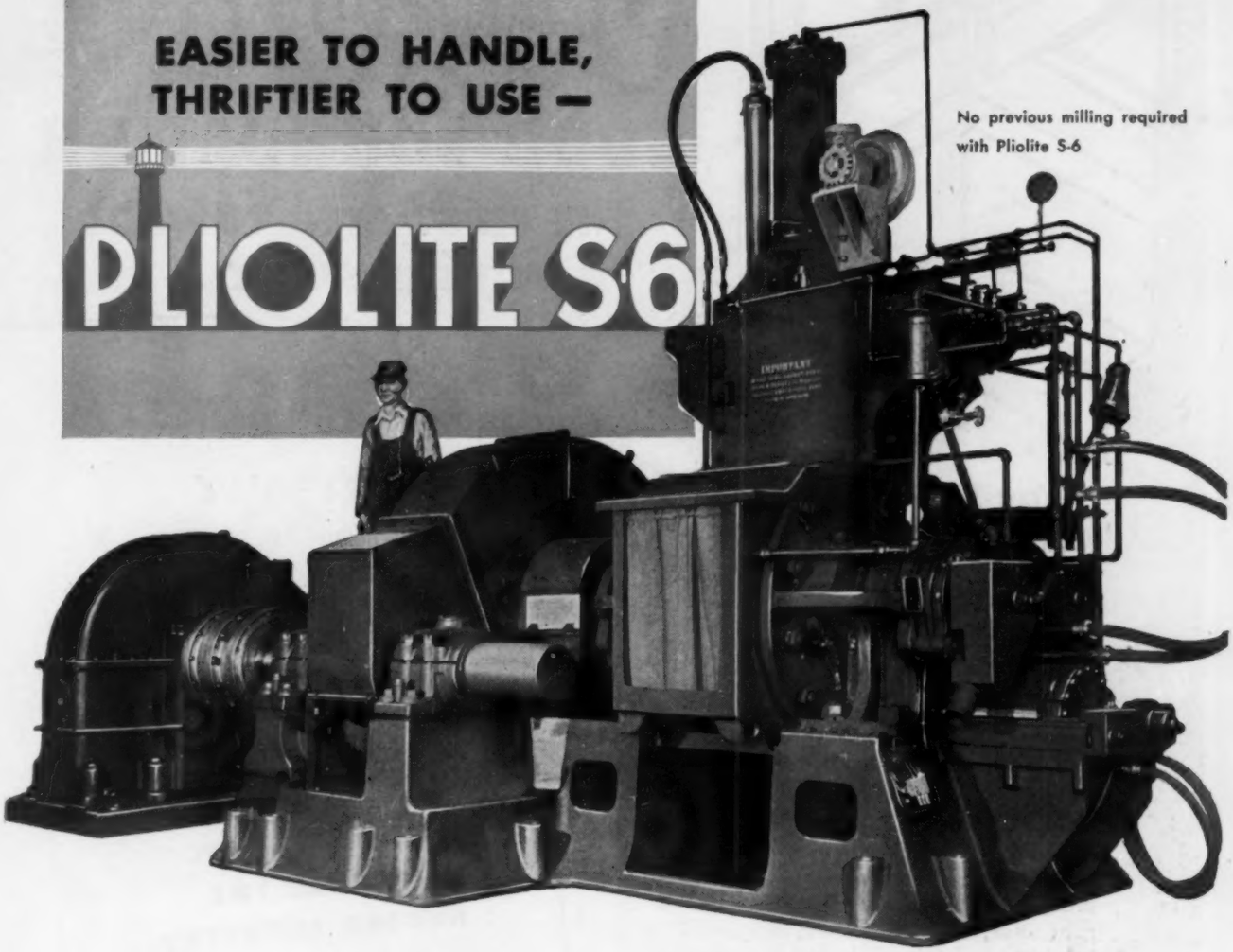

TITANOX here
means whiter, brighter products later
When you use TITANOX in compounding rubber stock, there's no doubt about the long-lasting eye-appealing appearance of finished products.
Why? Because a minimum of these well-known titanium dioxide pigments whiten, brighten and opacify rubber to the maximum. They disperse easily, contribute extra strength and resistance to abrasion.
If you have a rubber pigmentation problem, consult our Technical Service Laboratory.
TITANOX
TRADE MARK
TITANIUM PIGMENT CORPORATION
SOLE SALES AGENT
TITANOX

111 Broadway, New York 6, N. Y.
104 So. Michigan Ave., Chicago 3, Ill.
350 Townsend St., San Francisco 7, Cal.
2472 Enterprise St., Los Angeles 21, Cal.

5150

EASIER TO HANDLE, THRIFTIER TO USE —

PLIOLITE S-6



No previous milling required with Pliolite S-6

ONE of the chief advantages of **PLIOLITE S-6** is that it can be mixed directly in a Banbury, without intermediate milling.

By eliminating preliminary heavy-duty milling, this light-gravity, non-discoloring resin saves you considerable time and money. In addition, **PLIOLITE S-6** gives you these other valuable advantages:

1. It reinforces GR-S and Buna N rubbers, improving tensile, elongation and tear. Also gives additional reinforcement to black stocks.

2. Increases stiffness, while maintaining inherent rubber toughness.

3. Increases hardness without overloading or overcuring.

4. Increases flex life.

5. Improves processing, making possible the extrusion of thin-walled wire insulation, accurately centered, and of uniform wall thickness.

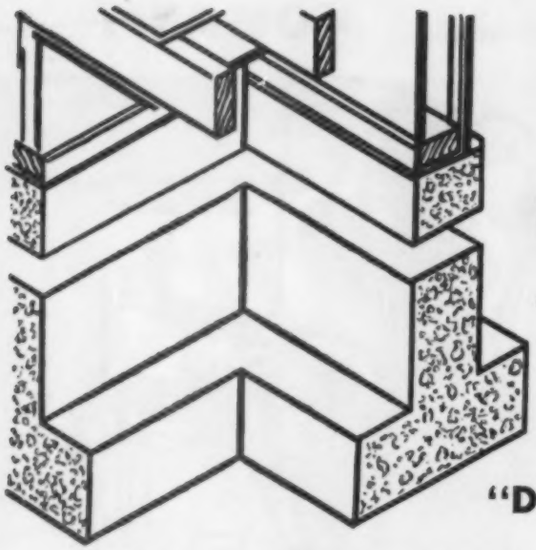
6. Excellent electrical properties make it a valuable component in wire insulation and other electrical applications.

You will find **PLIOLITE S-6** to be highly satisfactory for all compounds needing a light-color, low-gravity stock of 70-90 durometer hardness with good processing characteristics and moldability. It is effective with GR-S, Neoprene, Buna N and natural rubber. Available as a powder for your own mixing, or in master batches in whatever synthetic you select. For complete information and sample, write: Goodyear, Chemical Products Division, Plastics and Coatings Dept., Akron 16, Ohio.

Pliolite—T.M. The Goodyear Tire & Rubber Company

GOODYEAR

THE GREATEST NAME IN RUBBER



A GOOD FOUNDATION

...THE FIRST STEP TOWARD FUTURE SUCCESS

"Doc" MacGee says:

You Build Soundly When You Buy SKELLYSOLVE

Your future business depends on the quality of your product, which in turn depends on the quality of the *ingredients* you use. That's why the money you invest in industrial naphthas is so vital to your continuing business volume and income.

There's a reason for the uniform superior quality of Skellysolve . . . why you as a user can rely on Skelly for dependable service and on-time shipments.

Skelly Oil Company pioneered the making of close-cut type naphthas for specific industries over 16 years ago. Since that time, steady production . . . backed by diligent research and improved processes . . . has been maintained. And that production has expanded to meet newer requirements and growing demands.

Prompt delivery of Skellysolve is something you can count on, too. That has been an important point in the Skelly policy of service to industry . . . will continue to be in the years ahead.

True, you may be able to buy competitive naphthas today at slightly lower prices. But what assurance do you have that they will *stay* lower in price . . . much less continue to be available in quantities needed? And what assurance of uniform quality do you have? Or of dependable delivery?

These and other points are worth considering when you invest in naphthas. Keep them in mind—and remember that you're building on a sound foundation when you invest in time-proved Skellysolve. It *still* serves you *best!*

HOW SKELLYSOLVE SERVES THE RUBBER INDUSTRY

There are six different types of Skellysolve especially adapted to various uses in this industry, for making rubber cements and for many different rubber fabricating operations. Skellysolve offers many advantages over benzol, rubber solvent gasoline, toluol, carbon tetrachloride, etc. Our Skellysolve Technical Fieldmen have aided many manufacturers in developing formulas for new or improved products, and in "shooting" solvent troubles. Write today for full information.

SKELLY

SKELLYSOLVE

SOLVENTS DIVISION, SKELLY OIL COMPANY

SKELLY BLDG., KANSAS CITY, MISSOURI

One of our several warehouses at Ryus, Kansas

Producing the highest type carbon blacks is United's main purpose, but United's service to its customers is just as important. This program of service includes packaging so that no time is lost in either handling or identification of contents. On the reverse side of this page, you will note the distinct printing of the bags:

SRF blacks packed in black bags printed in RED.

HMF blacks packed in black bags printed in GREEN.

United's service and United's blacks are designed for your needs.

UNITED CARBON COMPANY, INC.

CHARLESTON 27, W. VA.

NEW YORK • AKRON • CHICAGO • BOSTON

DESIGNED FOR HANDLING

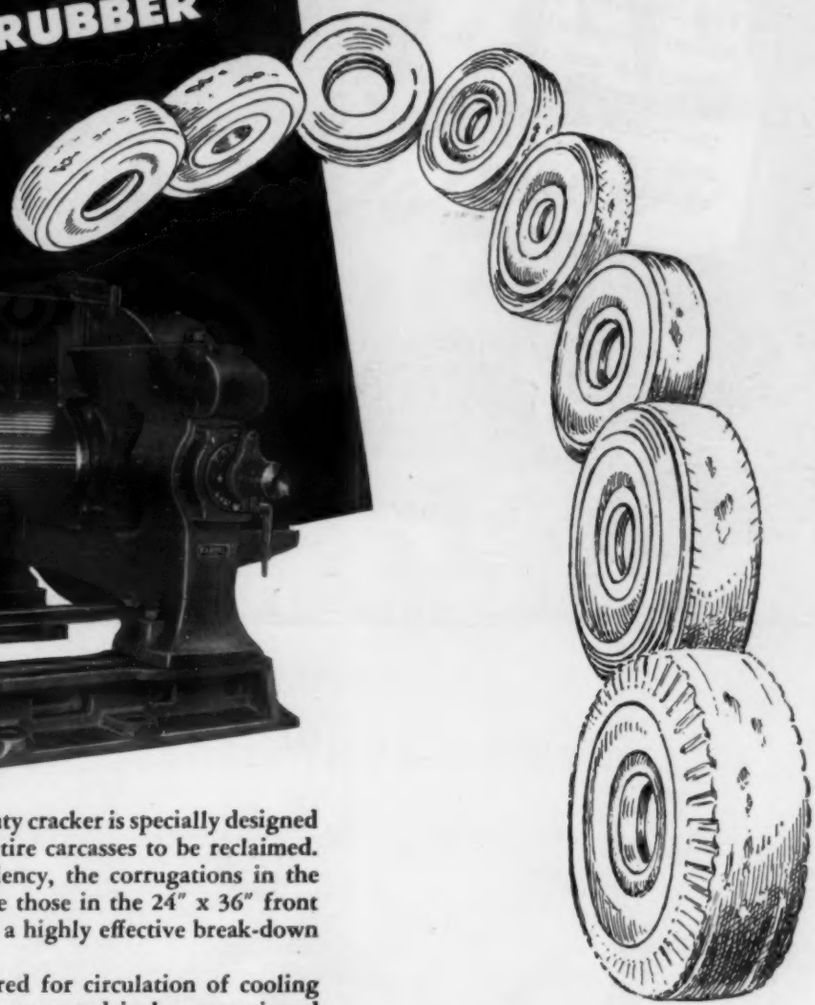
UNITED BAGS claim attention everywhere with their distinctive colored markings. Each type—SRF, HMF, EPC—is the answer for the exacting compounder and is acclaimed for performance in the millroom and on the road. Standardize on UNITED BLACKS to attain perfection in rubber products.

RESEARCH DIVISION

UNITED CARBON COMPANY, INC.

Charleston 27, West Virginia

DESIGNED TO CHEW MORE GOOD RUBBER OUT OF OLD TIRES



This Farrel-Birmingham heavy duty cracker is specially designed to do a better job of chewing up old tire carcasses to be reclaimed.

To provide maximum salvage efficiency, the corrugations in the 28" x 36" drive roll are saw cut, while those in the 24" x 36" front roll are U cut. This combination gives a highly effective break-down action on the tire carcass.

The rolls are hard chilled iron, cored for circulation of cooling water, with precision ground journals mounted in boxes equipped with automatic force-feed lubrication. The guides are automatically adjustable with the adjustment of the front roll.

To provide adequate strength for this heavy duty service, the Meehanite housings are of the heavy proportions ordinarily used for an 84" rubber mill. The stringer bedplates on which the machine is mounted are also made of Meehanite and are heavily designed to provide rigid support.

The cracker is arranged for drive by a 250 HP motor through a Farrel enclosed single reduction unit equipped with continuous tooth herringbone gears. The cut spur drive and connecting gears are enclosed in steel guards and run in oil.

If you need a cracker or any other rubber processing equipment of the type listed here, consult Farrel-Birmingham engineers for recommendations. No obligation.

FARREL-BIRMINGHAM COMPANY, INC. · ANSONIA, CONN.

Plants: Ansonia and Derby, Conn., Buffalo, N. Y.
Sales Offices: Ansonia, Buffalo, New York, Boston, Pittsburgh, Akron, Chicago, Los Angeles, Tulsa, Houston

FB-301

F-B
PRODUCTION UNITS

- Banbury Mixers
- Plasticators
- Pelletizers
- Mixing, Grinding, Warming and Sheeting Mills
- Bale Cutters
- Tubing Machines
- Refiners
- Crackers
- Washers
- Calendars
- Hose Machines
- Hydraulic Presses and other rubber working equipment.

Farrel-Birmingham

This advertisement in The Saturday Evening Post features BARRETT Rubber Compounding Chemicals and shows the vital part played by the rubber industry in raising the American standard of living.

HOW MANY rubber articles in this picture? That's a game you could play almost *anywhere*, for rubber is an ever-present part of our living. To adapt rubber for its varied applications, the rubber industry relies heavily upon chemicals, like **CUMAR* resin, which are supplied by BARRETT.**

HOW BARRETT SERVES THE RUBBER INDUSTRY. BARRETT CUMAR* resin and more than a score of other BARRETT Rubber Compounding Materials are widely used by the rubber industry to impart desired degrees of hardness, softness, elasticity, wear resistance or other characteristics to natural, synthetic and reclaimed rubber. You benefit from their use in automobile tires and tubes, garden hose and rubber footwear, gloves, wire insulation, friction tape, adhesives and hundreds of other items in daily life. Helping American industry in basic ways has made Barrett **ONE OF AMERICA'S GREAT BASIC BUSINESSES.**

Barrett*

THE BARRETT DIVISION
ALLIED CHEMICAL & DYE CORPORATION
40 RECTOR STREET, NEW YORK 6, N. Y.

BARRETT RUBBER COMPOUNDING MATERIALS

CARBONEX* Rubber Softener and Extender...CARBONEX*S Rubber Softener and Extender...CUMAR* Paracoumarone-indene Resin... BARDOL* Rubber Compounding Oil...BARDOL*B Rubber Compounding Oil...DISPERSING OIL No. 10...B.R.H.* No. 2 Rubber Reclaiming Oil...B.R.S. No. 700 Rubber Softener...B.R.T.* No. 3 Rubber Reclaiming Oil and Saturant...B.R.T.* No. 4 Rubber Reclaiming Oil...B.R.T.* No. 7 Rubber Softener...B.R.V.* Rubber Softener...B.R.C.* No. 20 Rubber Plasticizer and Extender...RESIN "C"* Coal-tar Resin... DIBUTYL PHTHALATE...PHENOL...CRESYLIC ACID...BENZOL...TOLUOL...AMMONIA.

*Reg. U. S. Pat. Off.

Butaprene NAA

IS THE *Preferred Polymer*

FOR HANDLING OILS AND FUELS

Here's Why:

1. **Positive Sealing with All Types of Fuels**
2. **Low Swell in Oils and Greases**
3. **Easy Processing - Tubes Without Plasticizers**

FORMULA	
Butaprene NAA	100
Medium Thermal Black	100
Zinc Oxide	5
Antioxidant	2
T.M.T. Disulfide	3
Santocure	3
TOTAL	213

NORMAL PHYSICAL DATA Slab Cures 20' x 312° F.	
Tensile psi	1530
Elongation %	555
Durometer A	63

OIL RESISTANCE

Medium	Hours Time	Temp. °F.	Volume Change	Durometer
ASTM No. 1 Oil	70	300	−3.09%	58
	70	212	−1.72%	58
	70	158	−0.43%	53
	70	80	+0.80%	53
ASTM No. 3 Oil	70	300	+8.00%	45
	70	212	+7.47%	47
	70	158	+4.44%	48
	70	80	+0.98%	53
FUEL RESISTANCE				
SR-10 Fluid	70	80	+2.86%	53
SR- 6 Fluid	70	80	+38.00%	33

The Butaprene technical staff will be glad to work with you in solving any problem regarding the use of Butaprene N elastomers in either latex or solid form. Write or wire XYLOS RUBBER COMPANY, distributors, Akron 1, Ohio.

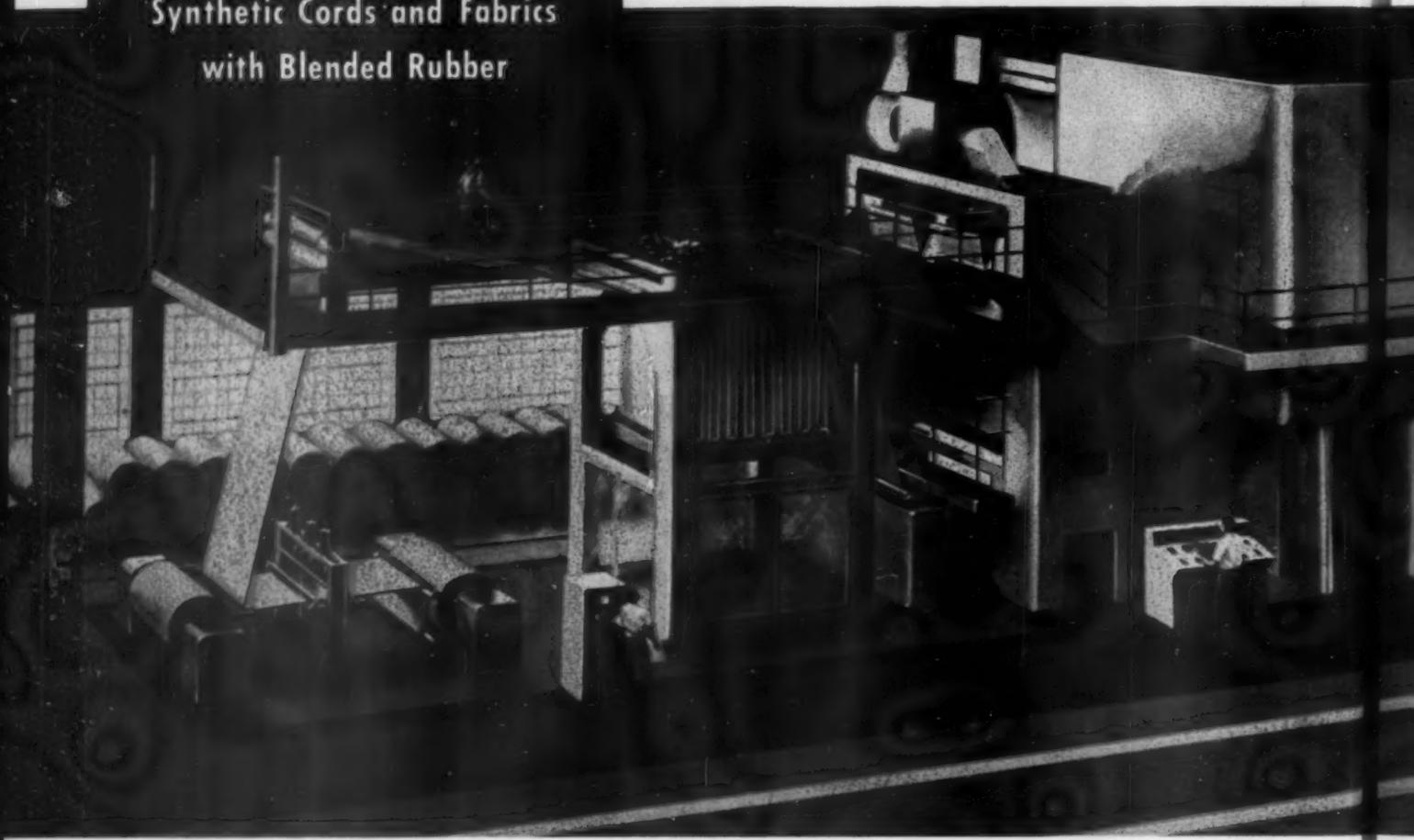
BUTAPRENE N

by Firestone

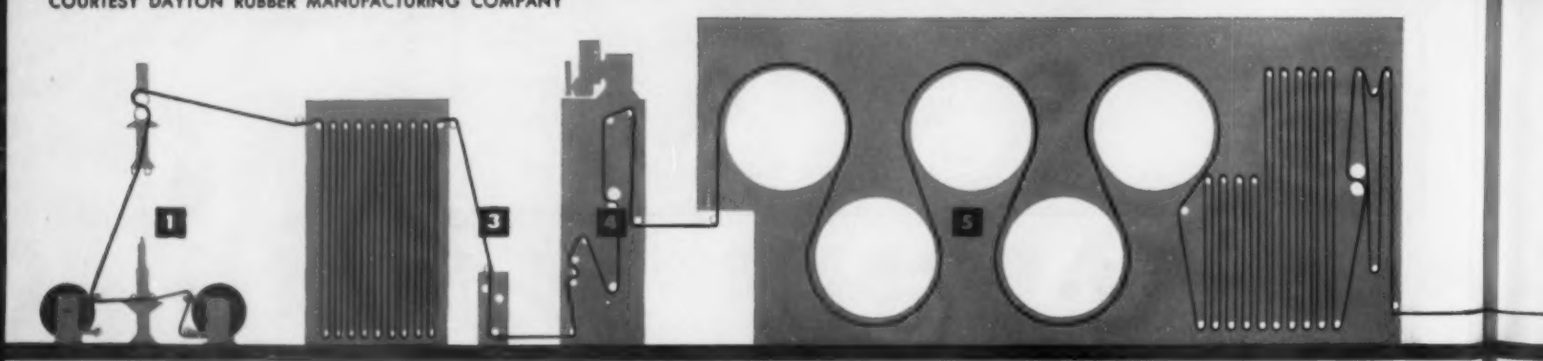
AMERICA'S *most* VERSATILE ELASTOMER

Continuous and electronically

For the treatment of
all types of Natural and
Synthetic Cords and Fabrics
with Blended Rubber



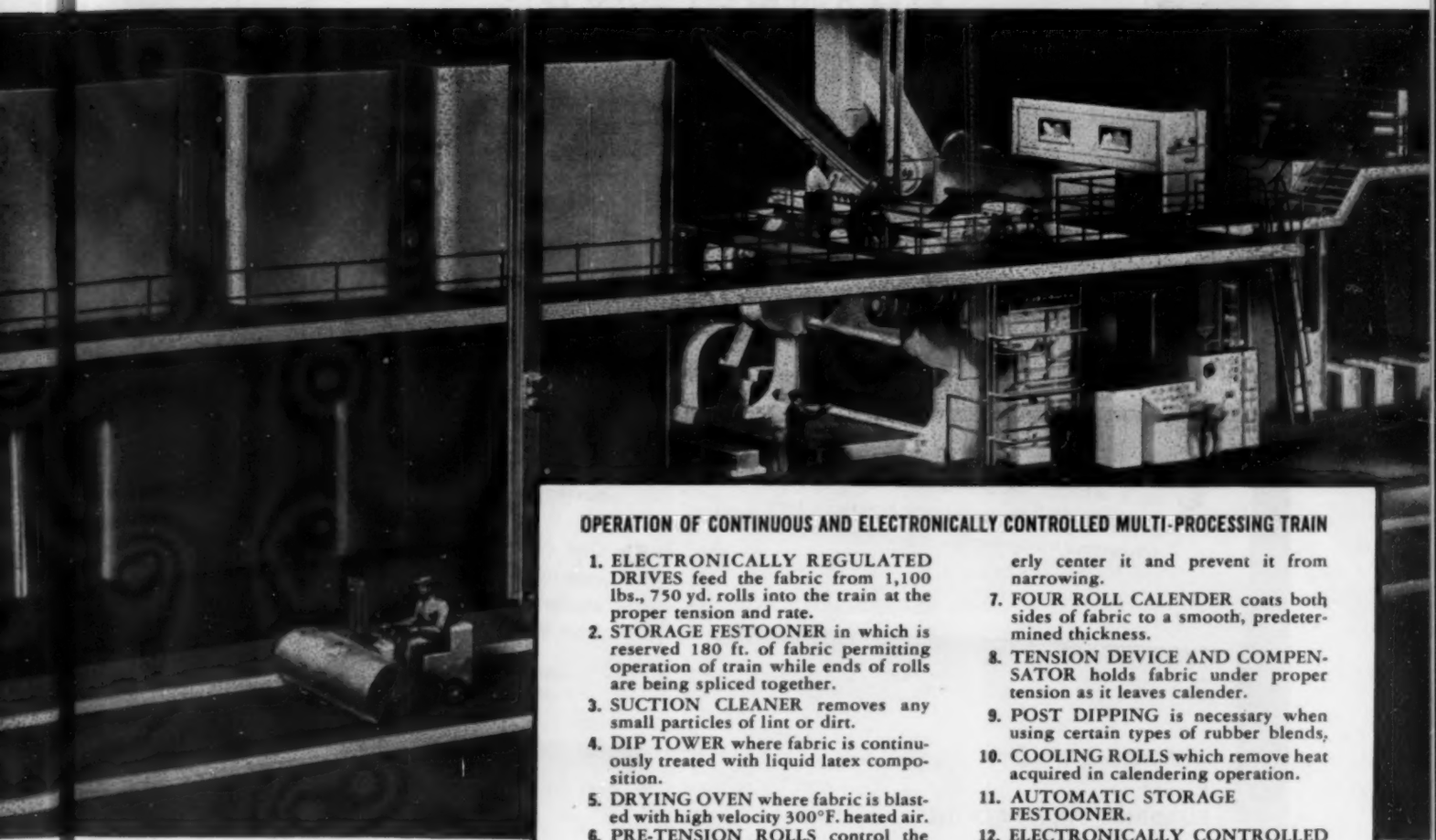
COURTESY DAYTON RUBBER MANUFACTURING COMPANY



This all electronically controlled tandem operation, *the first ever to be assembled,* treats all types of natural and synthetic cord fabrics with blended rubber in one continuous, high speed operation, eliminating the frequent re-handling of material in the many separate and slower operations formerly required. The unit adjusts to predetermined standards, by finger-tip control, the strength and elongation of the fabric, surrounding and impregnating each cord with blends of rubber. It dips, stretches, impregnates and coats at speeds up to 180 feet per minute. By synchronized electronic methods the highest quality of treated cords and fabrics is maintained to an exact degree of uniformity, with constant tension maintained at all points throughout the process.

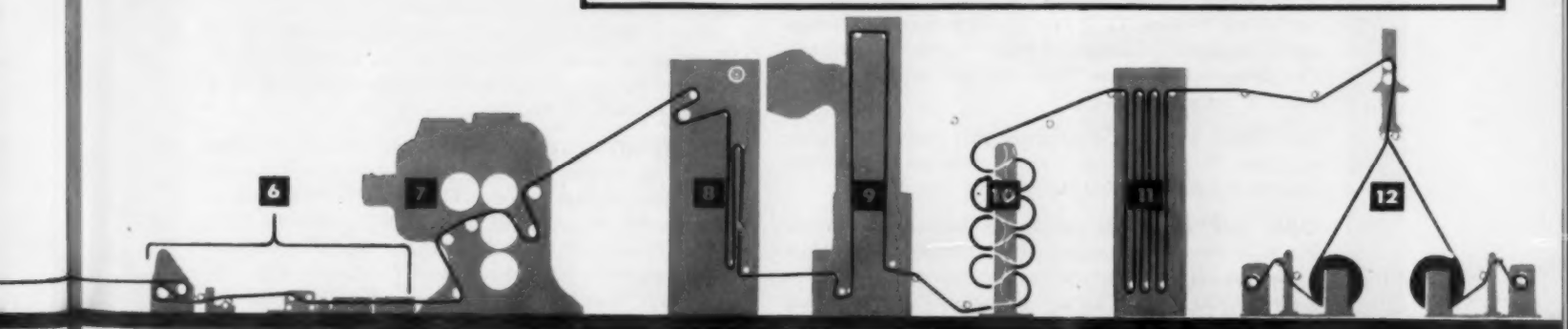
controlled multi-processing train

Recently designed, built and installed
by Adamson United Company
for a prominent Tire Manufacturer



OPERATION OF CONTINUOUS AND ELECTRONICALLY CONTROLLED MULTI-PROCESSING TRAIN

1. ELECTRONICALLY REGULATED DRIVES feed the fabric from 1,100 lbs., 750 yd. rolls into the train at the proper tension and rate.
2. STORAGE FESTOONER in which is reserved 180 ft. of fabric permitting operation of train while ends of rolls are being spliced together.
3. SUCTION CLEANER removes any small particles of lint or dirt.
4. DIP TOWER where fabric is continuously treated with liquid latex composition.
5. DRYING OVEN where fabric is blasted with high velocity 300°F. heated air.
6. PRE-TENSION ROLLS control the fabric entering the Calender to properly center it and prevent it from narrowing.
7. FOUR ROLL CALENDER coats both sides of fabric to a smooth, predetermined thickness.
8. TENSION DEVICE AND COMPENSATOR holds fabric under proper tension as it leaves calender.
9. POST DIPPING is necessary when using certain types of rubber blends.
10. COOLING ROLLS which remove heat acquired in calendering operation.
11. AUTOMATIC STORAGE FESTOONER.
12. ELECTRONICALLY CONTROLLED WIND-UP MACHINES.



Designing processes and building machinery to meet special or unusual requirements is our business. The experience and abilities of our engineering staff are available for your particular problems.

Adamson United Company

AKRON, OHIO

SALES OFFICES: New York—441 Lexington Ave. New York City • Chicago—140 S. Clark St., Chicago, Illinois
Paris—5 bis Rue Massenet, Paris 16e, France

DETROIT PUBLIC LIBRARY
DETROIT PUBLIC LIBRARY

Available now

THREE-BURNER UNIT

CHANNEL-TYPE CARBON BLACK PLANT

Seagraves, Gaines County, Texas.

FOR SALE OR LEASE

1. As a whole, for operation at present site;
2. As a whole, less one or two burner units and appropriate accessory buildings and equipment for operation at present site, or—

FOR SALE

3. As a whole, except dwellings*, for dismantling and removal from site;
4. One or two burner units only and their appropriate accessory buildings and equipment for dismantling and removal from site.

*Dwellings to be offered separately, if remainder of Plancor is sold for removal from site.

DESIGNED CAPACITY: Approximately 13,000,000 pounds.

BUILDINGS AND FACILITIES: Gas Desulphurization (Treater) Plant, designed capacity—21 million cubic feet of gas per day. Gas Supply Line. Carbon Black Plant—Three Burner Units, each consisting of 60 Burner Houses, 12′ x 116′ x 9′. Processing, storage and miscellaneous accessory buildings and equipment. Dwellings—4 at Treater Plant site and 15 near Carbon Black Plant site.

DELIVERY STATUS: Currently, this facility is being operated by Columbian Carbon Company under an interim lease cancelable on 30 days' notice.

GAS SUPPLIES: Gas for the production of channel black is now being supplied by Phillips Petroleum Company and, in part, by an affiliate of the present lessee, Columbian Carbon Company. The contract with Phillips Petroleum Company extends through 1949 and is transferable with the Plancor. Columbian Carbon Company has expressed willingness to negotiate with prospective operators of the plant for such small additional supplies of gas as the company may have over and above its own needs.

War Assets Administration invites proposals for the purchase or lease of Plancor 2316, currently being operated by Columbian Carbon Company at Seagraves, Gaines County, Texas.

SEALED BIDS: Your sealed proposals on Standard Bid Forms will be received by War Assets Administration, Office of Real Property Disposal, North American Aviation Plant, Grand Prairie, Texas, until 2:00 P.M., C.S.T., November 5, 1947, at which time all proposals will be publicly opened and read. Credit terms may be arranged. War Assets Administration reserves the right to reject any or all proposals. For a more detailed description of this property and for Standard Bid Forms write:

WAR ASSETS ADMINISTRATION
OFFICE OF REAL PROPERTY DISPOSAL

NORTH AMERICAN AVIATION PLANT, GRAND PRAIRIE, TEXAS

1350-T

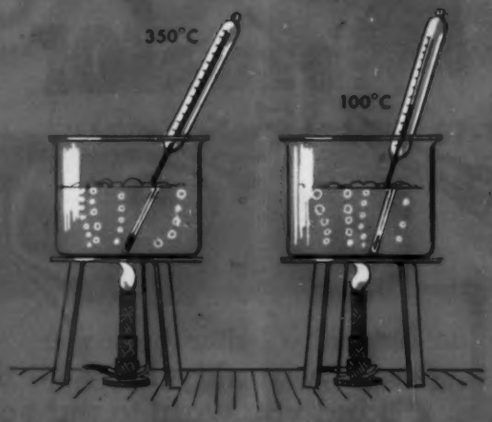
Picco HiSolv

AROMATIC PETROLEUM SOLVENTS

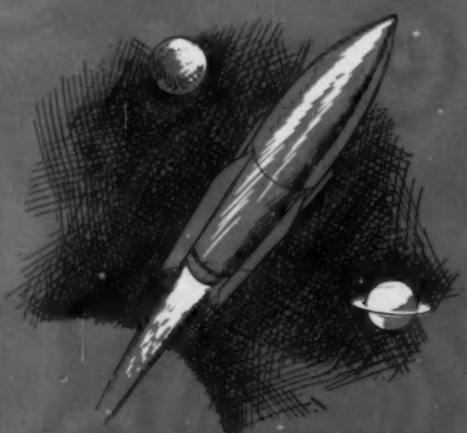
fully refined... available now!

Available now, and in large quantities, Picco HiSolv offers maximum solvent power per dollar invested. Some of the principal features of these high-quality products are illustrated below. Check your solvent requirements, and write for samples of Picco HiSolv for inspection and comparison. Specify boiling range desired.

GOOD ODOR



WIDE RANGE OF BOILING POINTS



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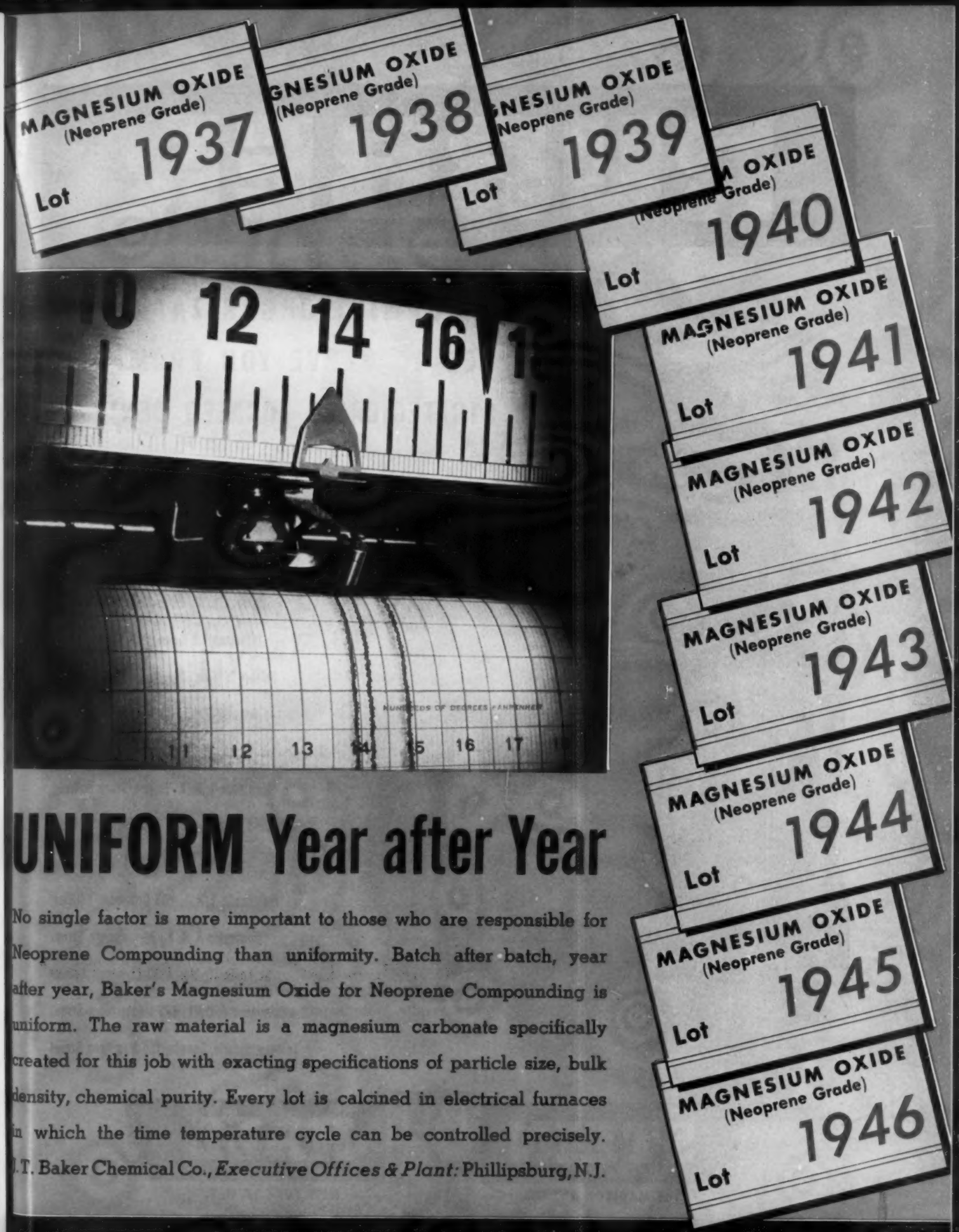

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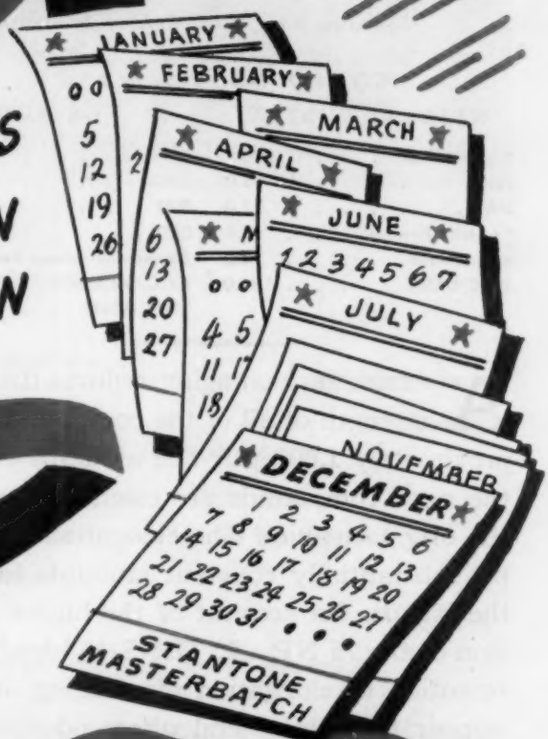

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Technical Bulletin No. 37 — on the Compounding of GR-S with Substantial Loadings of ZINC OXIDE

Blends of Natural Rubber and GR-S-10 with 100 Parts of Zinc Oxide

(Refer to Technical Bulletin No. 34)

(See also July, 1947, Rubber Journals)

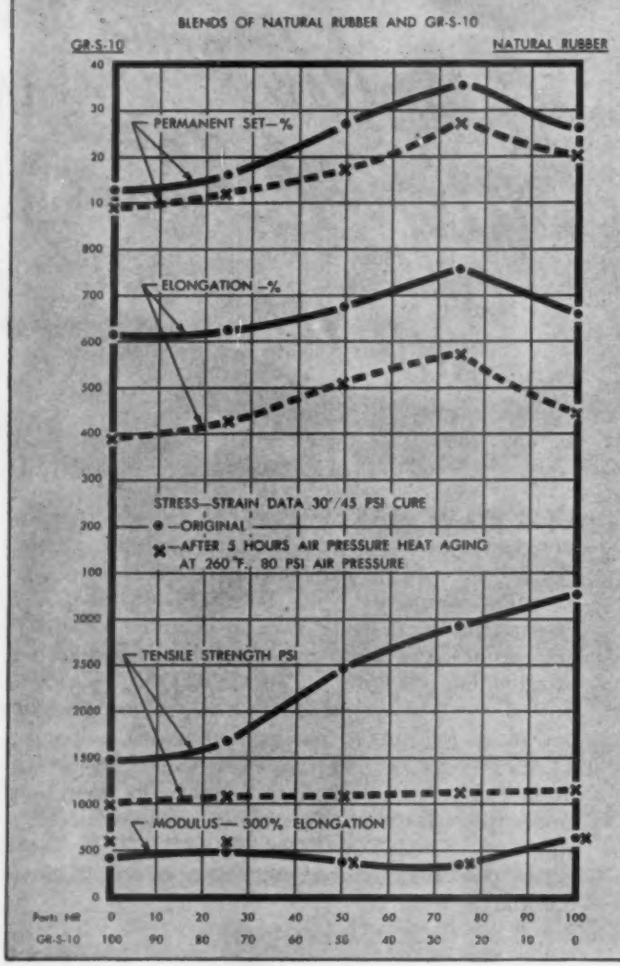
COMPOUNDS No. A and B

NATURAL RUBBER		GR-S-10	
Smoked Sheet	100.0	GR-S-10	100.0
Sulfur	3.0	Sulfur	3.0
MBT	1.0	MBT	2.0
"Agerite Powder"	1.0	DPG	0.1
Stearic Acid	3.0	Coumarone-indene Resin	3.0
ZINC OXIDE	100.0	E.L.C. Magnesia	5.0
		ZINC OXIDE	100.0

AIR PRESSURE heat aging reduces the tensile strength of all of the compounds to approximately 1,000 psi. The modulus values of the aged compounds are essentially equal to the original values. The elongation is reduced by substantially constant amounts for all of the blends. On account of the higher elongation of the 75 NR : 25 GR-S-10 blend and its retention of elongation after aging, it would appear that this blend offers possibilities in applications where severe aging conditions are involved.

The excellent heat aging characteristics of 100% GR-S-10 and 75 GR-S-10 : 25 NR blends, as indicated by the comparatively low depreciation after aging in tensile strength, elongation, and permanent set, should also be noted for extremely severe aging applications.

Original stress-strain data compared with five hours' air pressure heat agings at 260°F. and 80 psi air pressure


BLENDS OF NATURAL RUBBER AND GR-S-10
GR-S-10
NATURAL RUBBER
PERMANENT SET—%
ELONGATION—%
STRESS—STRAIN DATA 30'/45 PSI CURE
●—ORIGINAL
×—AFTER 5 HOURS AIR PRESSURE HEAT AGING AT 260°F., 80 PSI AIR PRESSURE
TENSILE STRENGTH PSI
MODULUS—300% ELONGATION
Parts NR 0 10 20 30 40 50 60 70 80 90 100
GR-S-10 100 90 80 70 60 50 40 30 20 10 0

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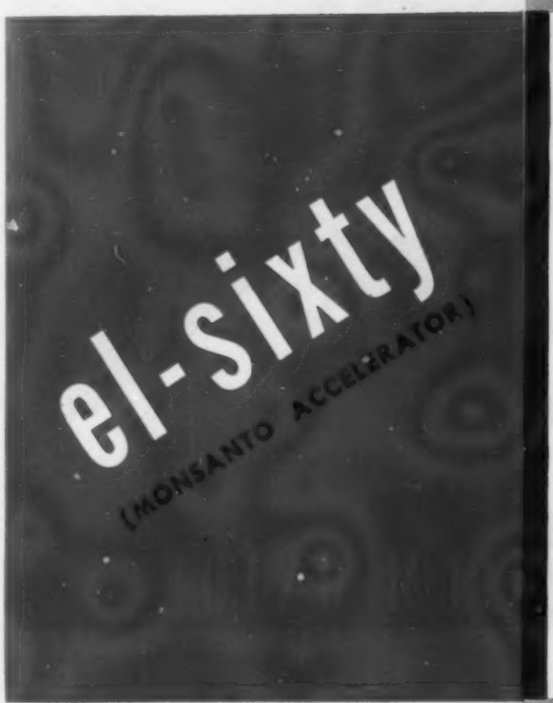

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2 Wide versatility.

3 Good in light and colored stocks.

4 Affected little or not at all by retarding pigments.

5 Excellent in pure gum or reclaim stock.

6 Most stable mercapto accelerator in latex. Causes no thickening in tanks.

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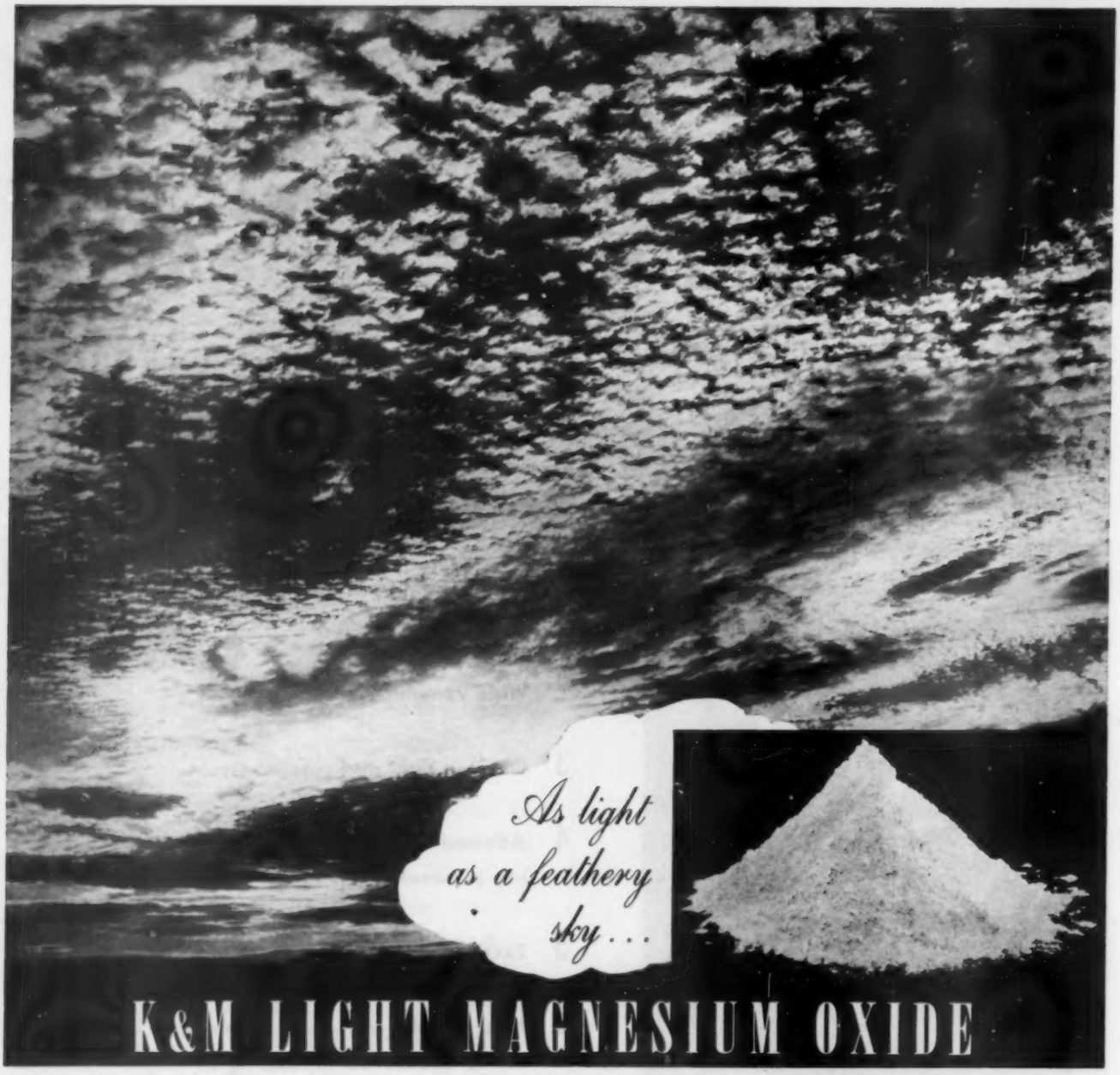

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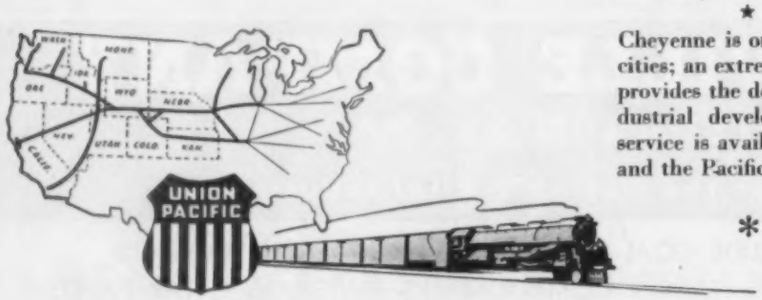

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☐ 13-6—Camel Back ☐ 13-7—Motor Mount & Bumper Compounds
☐ 13-8—Wire Jacket and other Extruded Compounds ☐ 13-9—GR-S Packing Compounds
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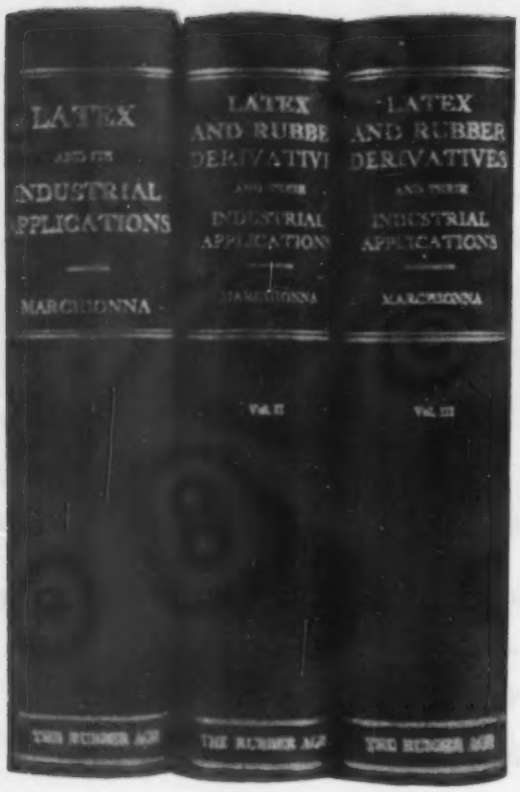

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- **Oxygen Aging**

A COMPARISON OF ANTIOXIDANTS in a Natural Rubber Tread Type Recipe

	Compound No. 1915 A	Compound No. 1915 B	Compound No. 1915 C
No. 1 Smoked Sheet	100	100	100
EPC Black	50	50	50
Zinc Oxide	5	5	5
Sulfur	3	3	3
El-Sixty	0.45	0.45	0.45
Santocure	0.30	0.30	0.30
Resinex L-4	2	2	2
Stearic Acid	3	3	3
Phenyl-beta-Naphthylamine	...	...	1
PDA-10	...	1	...

The test specimens were cured at 287° and tested at RT before and after ageing 96 hours, Oxygen Bomb at 70° C–300 lbs.

UNAGED

	Time of Cure	Modulus at 300%	Ult. Tensile	Ult. Elong.
Compound No. 1915 A (Control)	30 min.	1200	3700	603
	40 min.	1330	3770	580
	60 min.	1540	3930	563
Compound No. 1915 B (1% PDA-10)	30 min.	1120	3840	623
	40 min.	1300	4150	620
	60 min.	1490	4210	610
Compound No. 1915 C (1% PBNA)	30 min.	1090	3690	620
	40 min.	1310	4030	613
	60 min.	1400	3980	607

AGED

Compound No. 1915 A (Control)	30 min.	730	660	287
	40 min.	....	500	200
	60 min.	....	550	210
Compound No. 1915 B (1% PDA-10)	30 min.	1200	2070	480
	40 min.	1360	2240	470
	60 min.	1490	2090	430
Compound No. 1915 C (1% PBNA)	30 min.	1110	1830	463
	40 min.	1270	1970	453
	60 min.	1350	1930	423

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100 to 1,999 lbs.	$0.42 per lb.
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CONTRACT PRICES for equal monthly or quarterly shipments.

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Add 1c per lb. for West Coast.
Terms: 1–10 net 30. Freight allowed.

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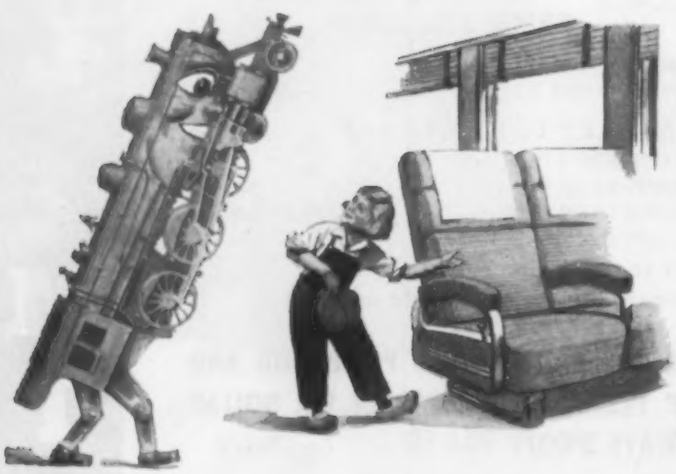

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Dutch Boy: "Absolutely—GR-S, GR-S-10, GR-M, GR-A or GR-I. Just let us know your specific application and our technical staff will gladly supply literature and any other information you need. Drop a line to the Rubber Division of our Research Laboratories, 105 York Street, Brooklyn 1, New York."

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2. *Lower Heat Build-up—Cooler Running*
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4. *Faster Curing Rate*
5. *Extended Curing Range*
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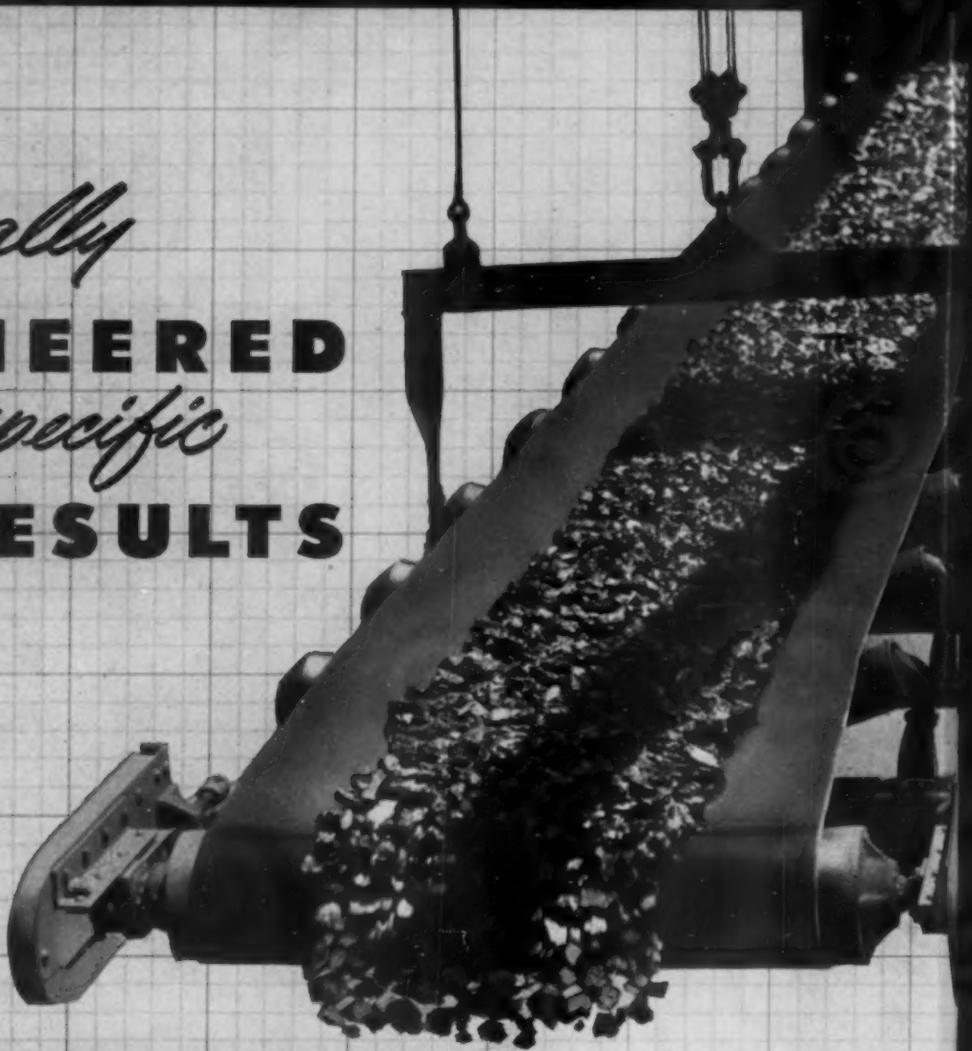

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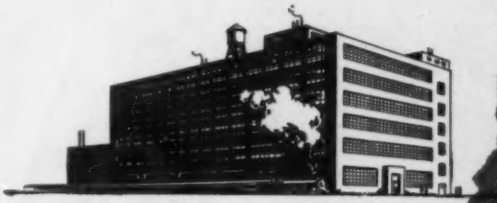

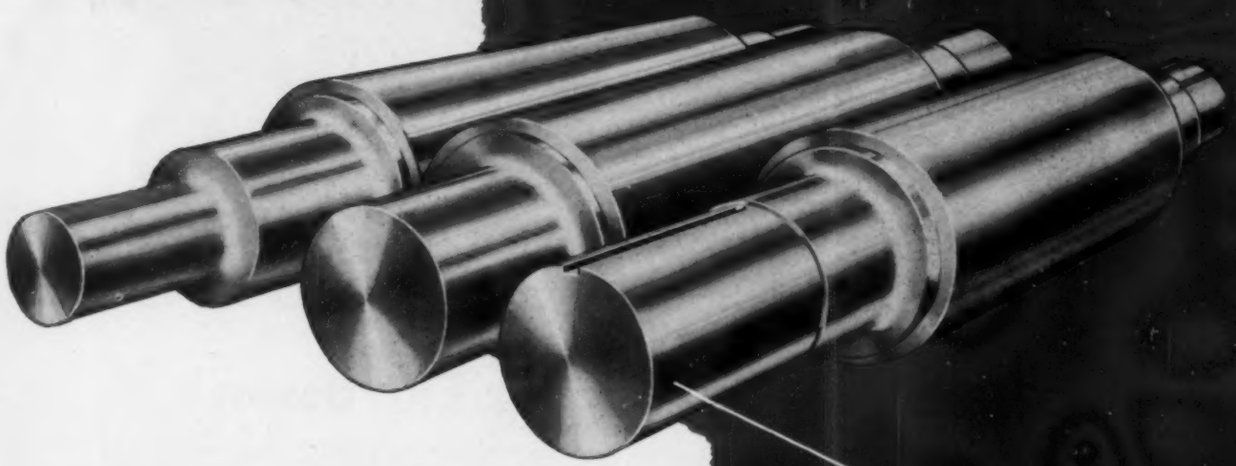

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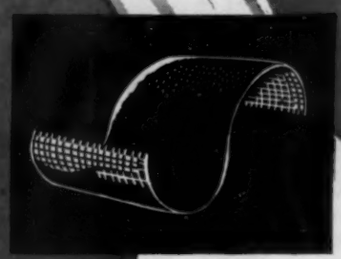

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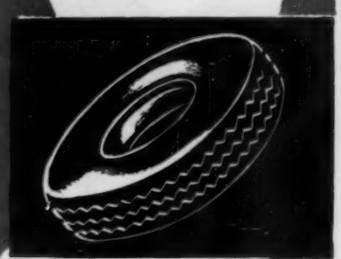

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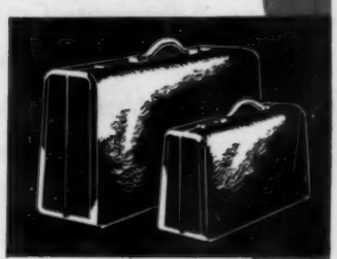

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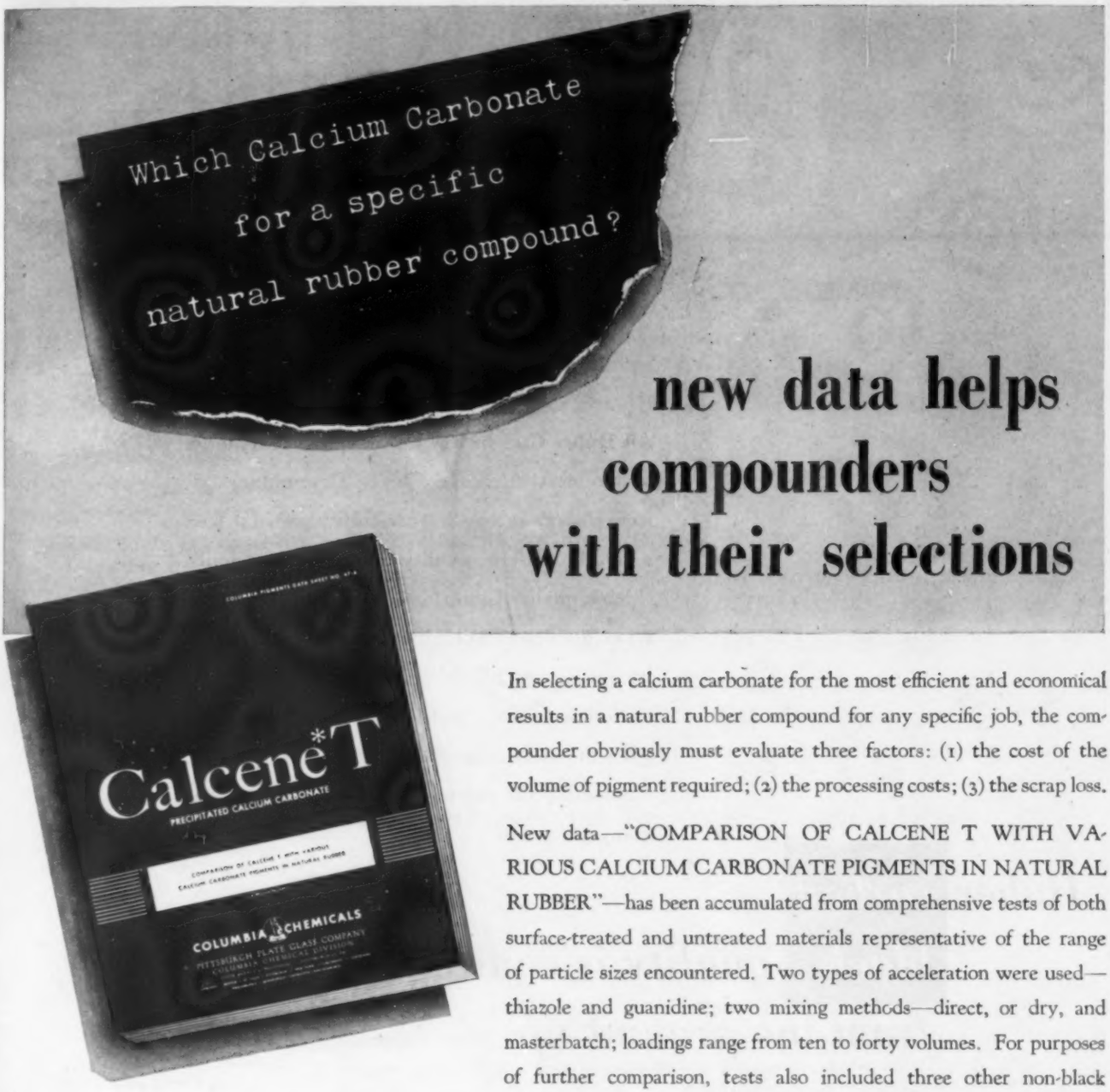

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CONTENTS FOR OCTOBER, 1947

The Structure of Polymers and Its Influence on Their Behavior during Reclaiming—*By D. S. le Beau* 51

German Techniques for Manufacturing Carbon and Lamp Blacks 55

Evaluation of MTM Modifier in GR-S-10—*By G. R. Mitchell, S. S. Michels, and C. M. Hofmann* 56

Decorating Vinyl Films—*By A. B. Sherry* 59

Neoprene Type NC—A New General Purpose Chloroprene Polymer 60

Fire Hazards and Protection of Rubber Cement—*By E. E. Turkington* 61

Spontaneous Ignition of Rubber Latex Deposits 63

Report on the Rubber Manufacturing Industry in South Africa 64

Fewer Rejects with High Temperature Condensate Return . 64

An Index to Vol. 61 of RUBBER AGE will be found on Pages 119 to 122 of this issue.

REGULAR DEPARTMENTS

New Equipment	93	Coming Events	71
Book Reviews	98	Obituaries	90
Editorials	67	Los Angeles News	86
Financial News	83	Rubber, Cotton Markets	104
Names in the News	76	Current Market Prices	106
Canadian News	88	Classified Ads	115

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RUBBER AGE

Vol. 62, No. 1 OCTOBER, 1947

The Structure of Polymers and Its Influence on Their Behavior During Reclaiming

By D. S. le Beau

Midwest Rubber Reclaiming Company, East St. Louis, Illinois

THE over-all principle in the art of reclaiming natural and also synthetic rubber scrap has not changed fundamentally over the decades of its practice. Depolymerization of rubber was, and still is, primarily based on the supply of either thermal, mechanical or other energy to the polymer. Thermal and mechanical means of depolymerization are at present more economical and therefore the basis for most reclaiming processes in practical use today.

Though the addition of reclaiming oils certainly cannot be dismissed as an unimportant factor in the reclaiming process, their effect would be greatly diminished, if at all possible, without a simultaneous supply of appropriate energy. On the other hand reclaiming oils may no more be looked upon as physical aids of the reclaiming process, their presence merely exerting a lubricating effect by penetration between the polymer chain molecules. If this concept had ever been true such volatile oils as solvent naphtha could hardly ever have been considered as economic reclaiming oils for natural rubber, nor could they have fulfilled their purpose.

As yet however, it is difficult to define exactly the function of each group of reclaiming oils during depolymerization and assign definite reactions to them. Before such attempts are made it seems worthwhile to consider the structure of the polymer itself and visualize the effect it might have on the latter's depolymerization. Therefore, a discussion of the functions of the reclaiming oils will not be attempted here and the reactions occurring during the reclaiming process, as discussed later on, refer to the reactions of the polymers only without consideration of reactions occurring due to the addition of oils.

The large scale production of GR-S and the economic as well as practical impossibility of segregating mixtures containing natural rubber and GR-S scrap very soon caused considerable difficulties in the production of reclaim. The reclaiming oils previously used for the reclamation of natural rubber did not, in general, come up to expectation in their effect on GR-S scrap. Among other goals which have to be achieved during the reclaiming process the obtainance of proper plasticity is one of prime importance for production. The plastification of natural rubber during reclaiming had almost been taken for granted, but it was this property which immediately caused trouble for the reclaimer when attempting to reclaim GR-S scrap.

Heat Hardening of GR-S

A closer study of plasticity versus time of steam-heating at a given temperature and pressure revealed significant differences in the behavior of natural rubber and GR-S. The rate of increase in plasticity was found to be very great at the outset of reclamation, both for natural rubber and for GR-S scrap (Figures 1 and 2). As the time of steam-heating progressed only comparatively small changes in plasticity could be observed for natural rubber (Figure 1). Distinctly different results were obtained for GR-S scrap where the initial and considerable increase in plasticity was followed by an almost equally pronounced decrease in plasticity, proceeding, however, at a somewhat smaller rate than the former (Figure 2). In other words, after an initial softening of the GR-S scrap had taken place during the first stages of steam-heating, a very

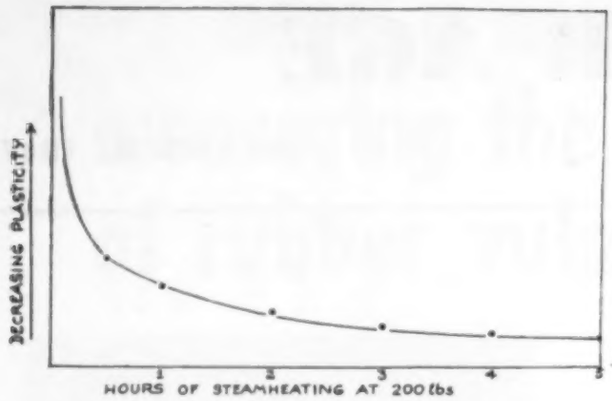


FIG. 1—Plasticity increase in natural scrap.

pronounced hardening of the scrap occurred upon further heating in steam.

The heat hardening of GR-S was even at that time well known to the compounder. Results obtained from GR-S compounds subjected to artificial heat-aging tests had demonstrated this property of the synthetic polymer. However, it remained for the reclaimer to show that this heat hardening occurs only after an initial and very short period of considerable heat softening. An explanation for this phenomenon can be attempted if the structure of the natural and synthetic polymer and its effect on the breakdown of the polymer molecules is taken into consideration.

Experiments have clearly shown that the breakdown of rubber or long chain olefins in general depends on the presence of minute traces of oxygen. Detailed chemical investigations have shown that radical chain mechanism reactions can be made to account for such breakdown *(5)*. The course of these reactions depends on the environment in which they occur (acid, alkali, oxygen, etc.) and also on the chemical nature of the long chain olefin. For natural rubber the latter will be largely governed by the reactivity of the α-methylenic group.

Experiments have also shown that not only does the mill breakdown of rubber *(3,4)* depend on the presence of oxygen, but also the thermal breakdown of rubber is connected with it. Crude rubber can be heated to 200°C. in an oxygen-free atmosphere for several hours without suffering any kind of depolymerization *(2)* and vulcanized rubber can be reclaimed by mechanical means at elevated temperatures if traces of oxygen are available *(4)*. The effect of even minor amounts of oxygen on the behavior of vulcanized GR-S compounds has also been shown lately *(8)*.

Thermal reclamation usually is carried out in an atmosphere of steam. However, oxygen is by no means excluded from the process. Steam and water, the scrap and fibres possibly present therein, as well as the reclaiming oils and defibring agents, contain oxygen at all times. The vessel in which reclaiming is carried out also contains oxygen and it would indeed be more than difficult to attempt to remove every trace of it during the reclaiming process. Thus, even though the necessity for the presence of oxygen during the reclaiming process may not have been recognized in the early days of the reclaiming industry, nevertheless practical use was made of it from the very beginning of the industry up to its present day production, where sometimes certain oxygen releasing chemicals are added to increase the speed of reclamation.

Inasmuch as smaller amounts of oxygen are usually present during reclaiming than during the accepted accelerated heat aging tests a much slower reaction of the polymer can be expected. Therefore such drastic steps as accelerated heat aging may mask the original heat softening of the GR-S, particularly since it is of such short duration. The heat hardening of GR-S, as observed in aging tests, would then be representative of the second part of the plasticity curve as shown in Figure 2.

Approximately 80 to 85% of all the reclaim produced in this country originates from scrap tires. Fiber removal from the tire scrap can be carried out either by mechanical or by chemical means. If it is carried out by chemical means economical considerations as well as considerations concerning the corrosion of the pressure vessels will unfortunately result in a rather slow rate of fiber decomposition which may not coincide with the initial and so very temporary heat softening of the GR-S polymer.

It is well known to anybody skilled in the art that good mill mixing of two substances widely divergent in their plasticities can hardly be accomplished. The immediate consequence of the difference in the plastic behavior of GR-S and natural rubber would by necessity reveal itself in the difficulty in the reclamation of mixtures of natural and synthetic rubber.

Inasmuch as the fundamental principles in the compounding of GR-S as well as those of the reclaiming processes had not been changed the reason for the difficulties originally encountered in reclamation can be considered to be a function of the structure of the GR-S polymer itself. Realization of this, however, did not come at once, partly because the reclaiming of rubber had for a long time been considered as a mere softening process and partly because the necessary knowledge in regard to the structure of GR-S polymers was not available at once, nor was the polymer in itself uniform enough during the early stages of its large scale production to permit adequate reproducibility of the results.

These conditions have now changed and it is possible to make use of the knowledge gained by x-ray and infrared analysis, ozone reactions, etc., in attempting to explain the differences encountered during the reclaiming processes between natural rubber and GR-S.

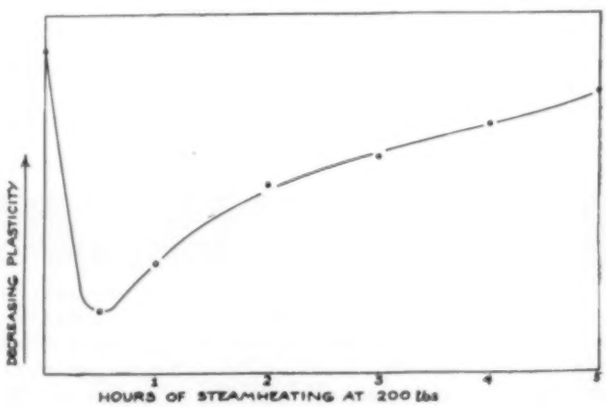


FIG 2—Plasticity increase in GR-S scrap.

Physical Behavior of Polymers

For several years now it has been recognized that the ultimate behavior of any polymer depends on two general features, of which the second one can be considered of almost greater importance:

(1) The chemical nature of the monomer units from which the polymer is made up.

(2) The physical state and structure of the long chain molecules in the polymer. This includes the length of the molecules, the statistical distribution of the various molecular sizes, and the shape of the molecules, represented by the presence of long chain molecules in natural rubber, or branched or netted chains in some of the synthetic rubbers.

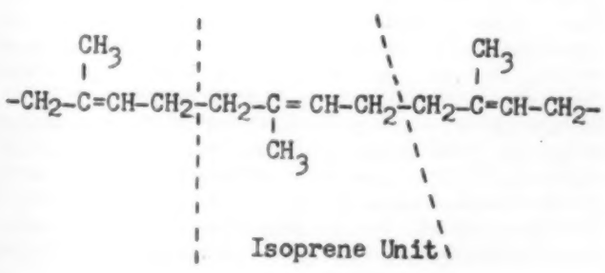
The shape of the molecules will be one of the predominant factors in the physical behavior of any polymer. It will control the processability, modulus, elongation, hardness, plasticity, heat build up and to a certain extent tensile strength. Therefore the shape of the reclaim polymer molecule will also have considerable influence on the behavior of the reclaim.

Although it has been recognized for a long time that the elastic properties of natural rubber are not a function of the presence of the isoprene unit, the chemical make-up of a polymer will nevertheless be of importance wherever its vulcanization, practical use, and particularly its reclaiming is concerned. The presence or absence of substitutional groups at the C=C bond influence greatly the breakdown of long chain olefins. Furthermore, certain functional groups in the polymer molecule have been associated with dipole linkage between the molecular chains. Such groups may be introduced, at least temporarily, during the reclaiming reaction.

Thus, the reclaimer may not entirely forget the chemical makeup of the polymer molecules with which he is dealing because this makeup can control their depolymerization and therefore exert a considerable influence on the reclamation as well as on the quality of the product produced by the reclaiming process. A combined consideration of factors (1) and (2) will undoubtedly lead to the most sensible approach of the problem.

Molecular Structure of Polymers

Trying to visualize the structural differences between natural rubber and GR-S it is necessary to consider the makeup of the molecular chains of each of these polymers. X-ray analysis has shown that in the case of natural rubber we are dealing with a 1, 4 addition product of polyisoprene formed into chains of varying length, coiled tightly and yet free enough to slip by each other with comparative ease upon application of stress. Schematically these chains can be represented by the following formula:



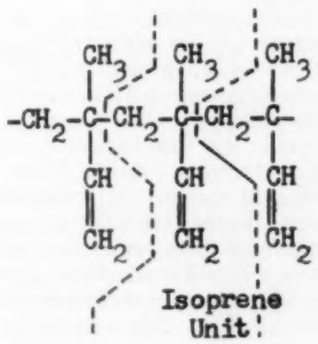
Chain breakdown would conceivably occur at those points where the smallest amount of energy has to be expanded to accomplish it. Bond strength and thermodynamic considerations have shown this to be at the links between the isoprene units. (Thermodynamic calculations in regard to the bond most likely to be broken in a polymer chain also have to take into consideration the resonance of the radicals formed by such breaks and the stability of the end products formed.)

The actual unsaturation of the reclaim is hardly different from that of the scrap from which it was prepared *(7)*, particularly not if the conditions under which reclaiming is carried out do not permit severe oxidation. Therefore reclaiming can, quite generally, be considered as depolymerization. Such depolymerization into smaller segments would amount to the formation of a lower molecular weight rubber which naturally can be expected to show greater plasticity than the original scrap.

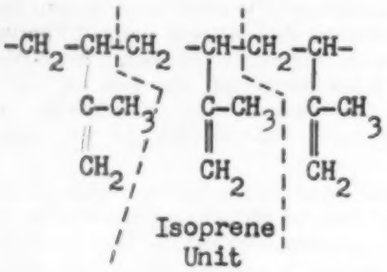
The reclaimer, however, is not concerned with the crude polymers, such as schematically reproduced here, but utilizes the vulcanized polymers. Vulcanization will in each case introduce some primary chemical valency bonds, and probably cause some other changes of a more physical character, the nature of which has not been clearly established as yet. Thus, a certain amount of rigidity is imparted to the vulcanized compound over and above that present in the original crude polymer. However, the actual amount of primary valency bonds introduced in this way is comparably small, and therefore the over-all picture of the structure of the polymer chains will not be changed to any great extent and can be disregarded for the moment.

As will be seen later the variety of changes introduced into the structure of the polymer chains in the course of synthetic polymerization are by far greater than those introduced by actual sulfur linkage. Furthermore, it is well known that reclaiming does not remove these sulfur linkages. However, it must be kept in mind that the polymer molecules present after reclaiming will not be quite identical in their makeup with those of the original crude polymer. Some netting is present due to vulcanization and the shape of the reclaim molecules will consequently be slightly more corpuscular.

If isoprene is polymerized synthetically, three different kinds of molecules have been found to occur, namely the 1,4 addition product as discussed for natural rubber, but not necessarily in its "cis" configuration, the 1,2 addition product resulting in branched chains:

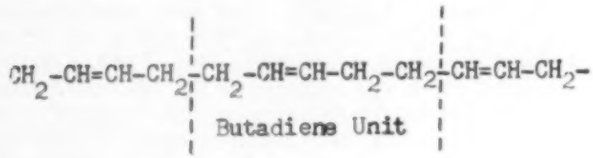


and the 3,4 addition product also resulting in branched chains:

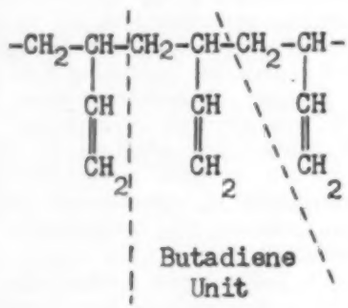


Even though offhand there seems to be very little difference in the structure of the 1,2 and 3,4 addition products—both resulting in branched chains—it is very likely that their depolymerization would proceed in different ways due to the differences in the position of the double bond and methyl groups.

If butadiene is polymerized two kinds of molecular structure can be obtained: The 1,4 addition product



resulting in long chains without branching is somewhat comparable with the structure found in natural rubber, while the 1,2 addition product

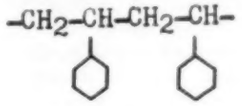


results in branched chains. The absence of the methyl groups in butadiene simplifies the possible addition reactions during polymerization.

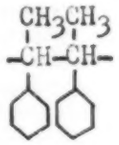
Infrared spectrography *(6)* has shown that in the GR-S polymer approximately 19% of the butadiene units are linked in the 1,2 position. In emulsion-polymerized polybutadiene about 21% of the 1,2 addition product is present and in sodium-polymerized butadiene 80% of the 1,2 addition product was found, whereas sodium-polymerized isoprene yielded mostly the 3,4 addition product.

Ozone analysis *(1)* has indicated that in GR-S about 31% of the styrene present forms a copolymer where butadiene and styrene alternate and where butadiene is present in the 1,4 addition position. 40% of the styrene present forms molecules where 2 styrene units are paired by polymerization. Such pairs are then separated by one or more butadiene units in 1,4 position. The remaining 29% of styrene enters into the position of branched molecules formed as a result of butadiene linking both in 1,4 and 1,2 position.

There is some evidence that styrene may not only polymerize by simple addition of the molecules



but also by forming a methyl group outside of the chain:



From the above it can be seen that whereas natural rubber conforms to one rather simple, repetitive and orderly fashion of polymerization, all of the above mentioned polymers are made up of a number of different molecular shapes actually containing different structural chain units throughout the whole mass.

Whereas in natural rubber the groups and their configurations important in the reactions occurring during oxydative (peroxidative) breakdown—which apparently includes reclamation—are not only spaced regularly, but also can be considered as identical in regard to the possibility of the reactions occurring throughout the molecular chains, synthetic rubber with its conglomerate of chain structures will permit a much greater variety of such reactions and make their control much more difficult even under identical and controlled thermodynamic conditions.

Linear polymers containing double bonds in the side chains will react differently under these conditions than network polymers. The absence of double bonds in the main chains (1,2 addition product) will not permit the peroxidative breakdown as encountered in natural rubber and consequently influences the reclaiming of such polymers adversely. At the same time, however, the double bonds in the side chains will be capable of reaction—the formation of epoxide, carbonyl and hydroxyl groups there is entirely possible—and these polar groups then can cause a recombination with other side chains resulting in the building up of network like structures. Fragments of that part of the polymer originally present in the 1,4 addition can also be used in the recombination with active side chains. The result in both cases then will be a network formation and consequently a hardening of the polymer during progressive reclamation rather than a softening of it.

Going back to Figure 2, it can be deduced that the original pronounced but temporary increase in the plasticity of GR-S reclaim can be ascribed to the peroxidative breakdown of the 1,4 addition polymer present therein. As the time of heating proceeds, however, extremely active radicals containing polar groups which have been formed during the first stages of heating, both from the 1,4, as well as from the 1,2 addition product, have been accumulated. Secondary reactions will then set in and cause the recombination of these fragments and radicals resulting in the formation of network structures. Comparatively few of these

structures will cause a considerable decrease in plasticity. As time of reclaiming proceeds the secondary recombination reactions will of course become more and more pronounced and heat hardening will be the predominant reaction. Thus the two diametrically opposed directions of the breakdown reactions can be held responsible for the peculiar shape of the plasticity curve of GR-S as shown in Figure 2. Such structural considerations then must lead to the conclusion that the shape of the reclaiming-plasticity curve of GR-S is not a function of the mode of the reclaiming process, but is a function of the thermodynamic and oxidative conditions during the breakdown of GR-S as controlled by the latter's molecular chain structure.

Certain results (solubility, gel formation, molecular-weight, etc.) which have been observed upon mill breakdown of crude GR-S may be explained on the same basis of reactions and structural considerations. Here the structure of GR-S can be of distinct technological advantage in that it controls at least in part such properties as shrinkage. In both cases (milling or reclaiming) the changes in plasticity, molecular weight, solubility and gel formation will therefore be determined by the structure of the GR-S polymer itself and must consequently be considered as a property inherent to the polymer whether it be reclaimed in the vulcanized condition or milled in its crude state.

Undoubtedly as our knowledge in regard to polymerization and the structure of polymers increases we shall be in a better position to picture these reactions and assign separate steps to them. Although GR-S was chosen for the above discussion, these reactions will have their bearings on other polymers wherever peroxidative reactions can occur; but in each case the structure of the polymer and its substitutional groups in the molecular chains will have a great deal of influence on its behavior.

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German Techniques for Manufacturing Carbon and Lamp Blacks

GERMAN techniques for manufacturing carbon and lamp blacks from enriched gases, anthracene oil, naphthalene and acetylene are described in a recent report made available by the Office of Technical Services of the U. S. Department of Commerce. A plant at Dortmund claims that anthracene residues yield 66 percent reinforcing black, valuable in synthetic rubber production. The report, which contains an evaluation of German blacks compared with Continental and United States products, was prepared by investigators for the British Intelligence Objectives Sub-Committee.

Insufficient wartime production of "CK3" and "CK4", said to be the best reinforcing carbon black products, forced the Germans to extend supplies by making semi-reinforcing carbon and lamp blacks. The reinforcing blacks were derived from anthracene oil and residues, naphthalene, hydrocarbon-enriched carrier gas, acetylene and, on a pilot plant scale, from a mixture of methane and oxygen. The semi-reinforcing types, inferior for rubber but valuable for printing inks, paints, lacquers, photographic and carbon papers, phonograph records and shoe polishes, were made mainly from anthracene residues and crude naphthalene.

"CK3" and "CK4" were produced in quantity from anthracene at Dortmund and from naphthalene at Kalscheuren by the Degussa process. The Germans ascribe the higher yield at Dortmund to the fact that anthracene with 3-ring molecules is more aromatic than naphthalene with 2-ring molecules. The investigators felt that the use of air in the Kalscheuren naphthalene process very likely accounted for the lower 48-percent yield of carbon black.

The Huls plant of I. G. Farbenindustrie produced wet and dry carbon blacks from by-products of acetylene manufacture by electric arc-cracking for compounding with Buna S. Further development of the process is said to show considerable promise of high yields of superior blacks.

A pilot plant was under construction at Bentheim to investigate commercial production of carbon black by pressure-exploding a controlled mixture of methane and oxygen. The process, which was to be semi-continuous, consisted of the incomplete combustion of methane. The product, "Hiag-Russ," was to be produced from coke oven gas saturated with light hydrocarbon vapors and was expected to compare favorably with American "Micronex."

The report describes German methods for the production of lamp black which, with minor exceptions, have not changed for 30 years. In addition it contains an evaluation of blacks in rubber; techniques employed to analyze blacks; classification or products; a list of applications, numerous tables, graphs and drawings.

Orders for the report, entitled "Investigation into Manufacture and Use of Carbon Blacks and Lamp Blacks in Germany" (PB-46388; 122 pages; microfilm, $3.00; photostat, $9.00) should be addressed to the Office of Technical Services, Department of Commerce, Washington 25, D. C., and should be accompanied by check or money order, payable to the Treasurer of the United States.

Evaluation of MTM Modifier in GR-S-10

By G. R. MITCHELL[1], S. S. MICHELS[2], and C. M. HOFMANN[3]

IN June, 1946, the Department of Agriculture requested a discontinuance or reduction in usage of DDM in the manufacture of Office of Rubber Reserve products, because of an impending shortage of lorol alcohol. MTM, a tertiary mercaptan blend, was developed by the Phillips Petroleum Company as a substitute for DDM modifier in GR-S polymers.

As a part of its development program for the Office of Rubber Reserve, the B. F. Goodrich Chemical Company undertook the development of a continuously polymerized GR-S-10 using MTM modifier. Following the development of a satisfactory polymer, it was produced as X-307 GR-S in the polymer plant at Port Neches, Texas, which is operated by the B. F. Goodrich Chemical Company as agent for the Office of Rubber Reserve. X-307 GR-S was evaluated for processing characteristics and tire qualities by the B. F. Goodrich Company. This report summarizes the result of this work.

15-Gallon Reactor Development

GR-S-10 batch polymerizations using MTM as a substitute for DDM modifier were made in order to (1) determine the polymerization characteristics of MTM modified GR-S-10, and (2) prepare polymers of a range of Mooney viscosities for determination of the toughness of polymer which would allow processing equivalent to GR-S-10.

It was determined that (1) the rate of increase in polymer Mooney viscosity at 72% conversion was 40% faster than for DDM modified GR-S-10, which would make the prediction of the finished reactor batch Mooney viscosity quite difficult; (2) the addition of 28% Phillips C_{16} tertiary mercaptan to the mixed tertiary mercaptan blend reduced the Mooney viscosity rise to a normal value; and (3) the reaction rates of the tertiary mercaptan modified polymerizations were 8 to 13 percent slower than DDM modified polymerizations.

The polymers produced in the 15-gallon reactors were evaluated for processing characteristics at the Government Evaluation Laboratory by its laboratory procedure, with the following results:

Modifier	1 Raw ML-4	2 CBS	3 % BB	4 Band	5 BR.T.	6 Sh.%	7 Rough
DDM	53	37	40	1	4	42	45
MTM	48	41	35	½	6	59	48
MTM	57	41	28	1½	6	57	48
MTM+C_{16} tertiary mercaptan	51	38	30	½	6	47	Too rough
X-244 Control *	57	32	42	1	4	51	111

[1] B. F. Goodrich Chemical Co., Rose Building, Cleveland, Ohio.
[2] Polymer Plant, Port Neches, Texas, operated by the B. F. Goodrich Chemical Co. as agent for the Office of Rubber Reserve.
[3] B. F. Goodrich Co., Akron, Ohio.

Note: MTM is a 3:1:1 blend of tertiary dodecyl, tetradecyl and hexadecyl mercaptans (pure basis) made by the Phillips Petroleum Co. The purities of the mercaptans were: Dodecyl mercaptan, 98%; Tetradecyl mercaptan, 84%; Hexadecyl mercaptan, 48%.

1. Raw ML-4—Mooney viscosity of raw polymer at 212° F. and 4 minutes.
2. CBS—Carbon black stiffening—ML-4-EPC black, 50 parts, for 22 minutes on a 6-inch mill.
3. % BB—Banbury breakdown percent—ML-4 decrease in 5 minutes on a laboratory mixer.
4. Band—Banding time in minutes.
5. BR.T.—Breakdown time in minutes, to form a uniform sheet.
6. Sh.%—Percent shrinkage—After a 1-minute remill on a 6-inch mill—shrinkage over a 24 hour period.
7. Roughness—Empirical, larger numbers denoting a rougher stock.

* Average of two tests.

Based on the processing tests, Mooney viscosities were chosen for the tertiary mercaptan modified polymers which were estimated to allow processing equivalent to GR-S-10:

Modifier Type	Mooney Viscosity
DDM	55
MTM	46
MTM+C_{16} tertiary mercaptan	48

175-Gallon Reactor Development

DDM, MTM, and MTM + t-C_{16} mercaptan modified GR-S-10 polymers were made in a 175-gallon reactor to the optimum Mooney viscosities determined in the 15-gallon reactor program to manufacture 600 pounds of polymer for Banbury mixing and tread extrusions in the tire factory and to confirm the polymerization characteristics observed in the 15-gallon reactors.

Recipe: All polymerizations were run to the standard X-244 recipe, except for modifier. (X-244 GR-S is the batch polymerized GR-S-10 Port Neches polymer plant control). The modifiers used were as follows:

Type	Manufacturer	Merc. Sulfur %
DDM	Hooker	14.0
MTM	Phillips	12.5
Tertiary Hexadecyl	Phillips	6.1 (49% Purity)

Procedure and Equipment: Polymerizations were carried out in an off center, Marine propeller stirred, 175-gallon reactor. Two Marine propellers were mounted on the shaft and operated at 225 rpm. The agitation was set to duplicate the modifier consumption of the X-244 recipe as used in standard plant polymerizations.

The soap was made up in the reactor at 50°C. to a pH of 10.3 ± 0.3. The soap solution was then cooled to 30°C. and the reactor was evacuated three times to 26", releasing with nitrogen each time, except the last. The butadiene, styrene and modifier were premixed and charged. The batch was heated to 50°C. and the catalyst solution was pressured into the reactor. Hydroquinone (0.10%) was added as a short-stop at about 72 percent conversion. The unreacted monomers were removed by first evacuating the latex to 20" and then steam stripping from 4 to 6 hours at 55 to 65°C.

In order to make 600 pounds of polymer, latex from two polymerization batches, equivalent to 700 pounds of polymer, was blended together and stabilized with 1½ percent of Stalite antioxidant. The latex batch

TABLE I—REACTION CHARACTERISTICS OF 175 GALLON CHARGES AT 50°C.

Charge No.	82-3	83-3	84-3	85-3	86-3	87-3	88-3	89-3	90-3
Modifier	DDM	MTM	DDM	MTM	DDM	MTM	MTM	DDM	DDM
Concentration	0.74	0.46	0.74	0.46	0.74	0.375	0.375	0.715	0.730
Modifier	—	—	—	—	—	$C_{16}M$	$C_{16}M$	—	—
Concentration	—	—	—	—	—	0.146	0.146	—	—
Soap pH	10.1	10.0	— –	10.3	10.1	10.3	10.3	10.3	10.2
1 hr. poly. pH	10.4	9.5	10.3	10.8	10.3	10.4	10.3	10.1	9.9
Time to 72% Conv.	15.0	16.5	15.0	16.3	14.9	16.5	16.7	15.0	16.3
Final Conversion %	71.5	71.5	71.0	71.5	71.0	72.0	71.0	72.5	71.0
Mooney Rise Units per Hour	6		8	11	8	8	8.5	8	8

was coagulated and washed according to the standard procedure. The filtered crumbs were wash milled and vacuum dried.

Polymerization Characteristics: Nine 175-gallon reactor batches were polymerized. Reaction characteristics are indicated in Table I. Four of the DDM control batches polymerized to 72 percent conversion within 1/10 of an hour of 15 hours. The fifth DDM control reaction cycle was 16.3 hours for unknown reasons. The substitution of MTM for DDM increased the reaction cycle about 1.4 hours, and the use of an MTM-hexadecyl mercaptan mixture extended the reaction time 1.6 hours based on the DDM control reaction cycle.

The Mooney viscosity rise per hour on one MTM modified batch was 11 units per hour. The DDM control and MTM+hexadecyl mercaptan modified batches exhibited Mooney rise values of 8 units per hour.

Polymer Batch Make-Up and Mooney Viscosity Correlation: The Mooney viscosity data (see Table II) indicated that adjustment of final Mooney viscosity values, based on small sample Mooney determinations, was hazardous. The Mooney results were, in general, 1 to 2 units on the low side. Fifteen-gallon reactor experience with similar polymers had previously yielded polymers of higher than expected Mooney viscosities. Based on this information, modifier concentrations for the 175 gallon reactor were adjusted on the high side.

Tire Plant Testing: A number of polymers were tested in a No. 27 Banbury using a typical GR-S-10 tread recipe with a two-step mix. Mooney viscosity data and processing data are given in Table III with test results in Table IV.

Plate die tread extrusions indicated that the MTM+C_{16} modified polymer was a good match for the DDM control polymer, being only slightly rougher in the thin wall section. The X-244 gave a rough extrusion. The MTM modified GR-S-10 extruded much smoother than the other polymers, indicating a too low Mooney viscosity.

Production of X-307-GR-S

The tertiary mercaptan modified polymer to be made at the Port Neches GR-S polymer plant was given the experimental production number GR-S-X-307.

The 70 percent MTM-30 percent hexadecyl mercaptan blend was chosen as the modifier because the Mooney viscosity control of the polymerization batches was estimated to be better than for the MTM modified batches, and the low Mooney viscosity (estimated at 46) required by the 100 percent MTM modified GR-S-10 for processing equivalent to DDM modified GR-S-10 was thought to cause processing difficulties in the GR-S polymer plant finishing lines.

The Mooney viscosity chosen for the 70 percent MTM-30 percent hexadecyl mercaptan modified polymer was 48±5.

The tertiary blend modifier requirements for the X-307 polymer were predicted at 0.42 part by assuming direct correlation with DDM from batch to continuous type GR-S-10 polymerizations. Actual requirements were 0.41 part of the tertiary blend.

Reactor control was excellent and no difficulties were experienced in monomer recovery, coagulation, filtering or drying. However, the rubber was so soft and tacky that it lumped badly in the conveyor system at the end of the drier. This was so serious that the majority of the 450,000 pound run had to be handled manually from the drier belt to the cross conveyor. Production of this type of polymer would not be practical with present equipment. Since the Louisville GR-S plant, operated by the B. F. Goodrich Chemical Company,

TABLE II—MOONEY VISCOSITY DATA

(Individual)

Charge No.	82-3	83-3	84-3	85-3	86-3	87-3	88-3	89-3	90-3
Stripped Mooney Visc.[1]	55	45	63	46	53	53	46	54	50
Unstripped Mooney Visc.[1]	53	43	61	45	54	45	45	57	55

(Blends)

Charge No.	82-3	86-3	83-3	85-3	87-3	88-3	89-3	90-3
Polymer Lbs.	412	288	412	288	408	292	431	269
Calculated Mooney Visc.[2]	54		45		50		52	
Actual Mooney Viscosity[3]	50		44		47		54	

[1] Small latex samples were salt-acid coagulated, washed, vacuum dried and mill massed.
[2] From salt-acid Mooney viscosity.
[3] As determined on wash milled sheets.

TABLE III—MOONEY VISCOSITY DATA

Modifier	Polymer Type	Raw Mooney Visc.
MTM	GR-S-10	42
MTM+C_{16}	GR-S-10	47
DDM	GR-S-10	53
DDM	GR-S-244 *	53

Processing Data

Modifier	Batch Stock MS-4′ @ 212° F. 1st Step	2nd Step
MTM	52	28
MTM+C_{16}	67	32
DDM	65	35
GR-S-244 *	79	37

* Now GR-S-10.

TABLE IV—STRESS-STRAIN RESULTS

(GR-S-10 Specification Test)*

Modifier		DDM Control	GR-S-244 Control	MTM+C_{16}	100% MTM
Tensile	25′	1950	1650	2450	1575
	50′	2900	2850	3050	2800
	90′	3050	3125	2800	3000
300% Mod.	25′	400	400	550	425
	50′	800	850	950	850
	90′	1150	1150	1300	1150
Elongation	25′	860	800	815	790
	50′	695	670	660	700
	90′	605	580	520	580
Banbury Cycles (1st Step)					
Dump Temp.		375° F.	375° F.	375° F.	375° F.
Dump Time		4½′	4½′	4½′	4½′

In second step, only oil added in Banbury.

* ORR Standard GR-S-10 Recipe: GR-S-10, 100; EPC Black, 50; Zinc Oxide, 5; Barrett Softener, 5; Sulfur, 2; Captax, 1.5; DPG Masterbatch, 0.8; Stearic Acid, 1.5.

manufactured X-204, a 50 ML GR-S-10 polymer, with only nominal difficulty, it must be concluded that the tertiary mercaptans were responsible for the processing difficulties.

Processing and Tire Tests

The X-307 polymer was processed in the Akron tire plant of the B. F. Goodrich Company as follows: *Plastication:* Two passes on 20″-15″ two-stage Gordon plasticator; *Mixing:* High speed No. 27 Banbury two-step mix; *Tubing:* Experimental plate die 20 hours after final mix. (See Table V for details). The X-307 polymer broke down more rapidly and extruded at lower temperatures than did the X-282 control polymer (continuous polymerized GR-S-10 control).

Tires were constructed from the DDM, MTM+C_{16} and MTM modified polymers. At 1800 miles, the following results were obtained:

Modifier	DDM (Control)	MTM+C_{16}	100% MTM
Tread wear index	100	100	115
Crack growth	129	220	165

The tread wear was comparable for the three polymers and the crack growth was within allowable tolerances. The crack growth was calculated as the percent increase in a ¼-inch cut made in the tire initially.

Summary

MTM GR-S-10 polymers were made in a 15-gallon pilot plant reactor in order to determine the polymerization characteristics. The polymer was produced at various Mooney viscosities in order to determine the polymer plasticity which would allow processing equivalent to GR-S-10. It was determined that MTM modified GR-S-10 must be of lower Mooney viscosity than GR-S-10 for equivalent processing, and that t-C_{16} mercaptan must be added to MTM in order to prevent very rapid Mooney viscosity rises during the polymerization.

Based on the 15-gallon reactor data, 600 pounds of an MTM modified polymer and 600 pounds of 72% MTM-28% t-C_{16} mercaptan modified polymer were produced. These polymers were Banbury mixed and tubed in the tire factory.

Based on the optimum Mooney viscosity determined by tire plant processing trials, X-307, continuously polymerized 70% MTM-30% t-C_{16} mercaptan modified GR-S-10 polymer, was manufactured. Polymerization, monomer recovery, coagulation, and drying of the polymer were normal. However, the majority of the 450,000 pounds of polymer had to be handled manually from the drier to the weighing scale. The softness and tackiness of the polymer made it impractical for handling in a screw type conveyor.

Factory manufacture of tires from the X-307 polymer indicated that it processed as well as did the X-282 (continuous polymerized GR-S-10 control). Tire tests at 1800 miles indicated that the tread wear of the X-307 type polymer was equivalent to the DDM control GR-S-10 polymer. Crack growth was slightly worse, but was within allowable limits.

ACKNOWLEDGMENT

The funds for carrying out this project were appropriated by the Office of Rubber Reserve, Reconstruction Finance Corporation. The cooperation and interest of the Office of Rubber Reserve in this work and the permission to present this paper are greatly appreciated. Factory processing results and tire tests were carried out by the B. F. Goodrich Company, Akron Tire Department.

TABLE V—PROCESSING DATA

Polymer Type	X-307	X-282 (Continuous polymerized control)
Plastication		
ML Viscosity—Crude	52.5	55
1st Pass	41.8	48
2nd Pass	36.0	41
Extrusion Temp. ° F.		
1st Pass	360	390
2nd Pass	365	400
Banbury Mix (First Step)		
Cycle Time—Minutes	5	5
Temperature	270° F.	270° F.
MS Viscosity @ 212° F., 4′	68	72
Banbury Mix (Second Step)		
MS Viscosity @ 212° F., 4′	38	42
Extrusion—cc/min.	13.4	18
% Black Dispersion	90	90

Decorating Vinyl Films

By A. B. SHERRY

Stanley Chemical Co., East Berlin, Conn.

ONE of the many materials which were perfected during the war for military uses, and which has enjoyed widespread use in postwar living, is unsupported vinyl film. This film, made from polyvinyl chloride or polyvinyl chloride-acetate, was known and made before the war, but high cost and poor physical qualities limited its use.

During the war, shortages of rubber and other flexible materials with necessary characteristics stimulated the development of stabilizers and plasticizers which permitted many uses of this flexible, cloth-like material. As the war ended the great shortage of cloth fabrics created a demand for something to take their place for civilian use. Since vinyl resins, restricted to essential wartime uses up to that time, were released in sizeable quantities for civilian use at war's end, they were immediately made available to fill this great demand.

Millions of yards of unsupported flexible film were rolled off calenders, and cast from solution and dispersion by rubber companies and companies of the flexible coating industry. This film, mostly clear and uncolored, became the "gray goods" of the film industry. The demand, of course, called for decorative materials, and so it was the converter's responsibility to make these films as attractive as possible. The most effective and most practical way of decorating is, as it is in the textile industry, by printing.

Illustration of single and multiple roto printing.

Illustration of the silk screen process.

Methods of Printing

Printing on vinyl film is accomplished by the use of three different methods:

1. Machine printing directly on the film.
2. Machine printing on paper and transferring to the film.
3. Hand printing on the film by the silk screen method.

The first method is accomplished by the use of a rotogravure printing machine, or a textile printing machine with very shallow etched cylinders, and is the most important and largest volume process. In this method inks are made with fast drying solvents, a resin base similar to that in the film, and pigments and plasticizers.

The rotogravure machine consists of a revolving cylinder called the printing roller which has the required design engraved or etched into the surface, and another roller usually made of rubber, called the impression roller. The printing roller rotates at a given speed partially submerged in a fountain of ink. An oscillating doctor blade wipes off all ink except that contained in the engraving. The surface to be printed, or web, is passed between the printing roller and the impression roller which exerts sufficient pressure on this web to enable it to pick all of the remaining ink from the engraving.

The now printed web is conducted through a heated chamber where the solvent is removed and either rolled up ready for fabrication or passed through another set of rollers which deposit another color and design on the surface. As many as four colors can be printed on this type of machine in fairly rapid succession. The speeds vary from 40 to 120 feet per minute.

Precise Register Difficulties

The flexibility and elasticity of the vinyl material makes for considerable difficulty in obtaining good register in this process of printing directly on the film; therefore, most of the successful multicolor work up to the present has been done with designs not requiring precise register. Work is being done on the development of methods for obtaining perfect register which will lead ultimately to process printing with its beautiful effects directly on the film.

Since the film is sensitive to heat, drying temperatures should not exceed 200°F. unless the web is supported during its exposure to these temperatures.

The textile printing machine consists of a large rotating drum with a series of engraved rollers arranged around its circumference. Each roller has its own doctor blade which when placed tightly against the roller forms a trough into which ink of the desired color is placed. The web to be printed is led around the large cylinder between the cylinder surface and the printing rollers, and is usually reinforced by a blanket of fabric on the reverse side. The rollers are adjusted to the proper pressure for printing and as the web passes through, the ink is picked from the engravings as described above. It is necessary to have as many rollers as there are colors to be printed. The number is sometimes as high as ten.

The second method employs a rotogravure machine on paper with a coated surface so that the ink is prevented from bonding tightly. Film is cast over this print in the form of dispersion or solution fused or dried, and then stripped off, taking the ink with it. In this method it is necessary to print in a reverse or a mirror image of the desired result.

The printing procedure for the second method is exactly the same as just described for the first except that higher temperatures and speeds can be used with less trouble. It is also possible to get perfect register in this process, since the web being printed is made from paper.

Hand Printing Method

The third method is done by the process of leaving openings of the design required on the surface of a tightly drawn fine mesh silk screen. The remainder of the screen is masked off using special preparations not soluble or reactive with the ingredients in the ink. The film to be printed is secured to a flat surface, the screen is placed on the film, and a rubber blade called a squeegee is drawn across the design, forcing the ink through the openings. Multicolor is accomplished by using several screens, each containing a part of the design adjusted in such a way that when each successive screen is placed on the film in the same spot an additional part of the pattern is laid down in a different color. Sometimes as many as fifteen or twenty screens are used in one design. Drying of each ink application is necessary before a new screen can be laid down.

The ink used in the silk screen process is the same type as that used in the other printing processes except that its drying has been slowed considerably.

The inks which in many cases are used to decorate film for window draperies and shower curtains are given rigid weathering, abrasion, blocking, crocking, and fastness tests.

Colors have been chosen and formulations have been balanced in such a way that the inks, which have become part of the film, are as durable and long-lasting as the film itself.

Since the film is virtually impervious, and drying by absorption or oxidation is impossible and impractical, the inks must necessarily be of the lacquer type containing volatile solvents. It is therefore impractical to consider the use of printing machines containing multiple transfer and distribution rolls.

Neoprene Type NC—A New General Purpose Chloroprene Polymer

A NEW general purpose chloroprene polymer which is reported advantageous in the manufacture of products such as thin walled extruded goods, which must retain their shape during processing operation, and for large sized hose and low durometer molded products has been developed by the Rubber Chemicals Division of E. I. du Pont de Nemours & Co., Inc., Wilmington 98, Del. Having a specific gravity of 1.23, the elastomer, designated as Neoprene Type NC, is supplied in the form of short sticks.

Neoprene Type NC has milling characteristics similar to those of Neoprene GR-M, having a plasticity grade of P-3, but does not stick to the mill rolls when plasticized by repeated milling. However, Neoprene Type NC has a slower initial rate of mill breakdown than Neoprene GR-M and appears to be tougher when first placed on the mill rolls. It requires mastication prior to Banbury mixing in order to avoid the development of excessively high batch temperatures during the early stages of the mixing cycle.

The physical properties of Neoprene Type NC vulcanizates are said to be equivalent to those of Neoprene GR-M and Neoprene Type GN when compared in stocks of the same composition and cure. Therefore, Neoprene Type NC may be substituted directly for these other types of neoprene without changing the properties of the finished product. However, the slower mill breakdown of the new elastomer permits greater latitude in the use of fillers and softeners without producing unvulcanized stocks unsuitable for factory handling.

Like Neoprene Type GN and GR-M, Type NC is reported odorless and its vulcanizates are said not to cause discoloration of petroleum hydrocarbons or lacquer and enamel finishes. The company claims that adequate preliminary breakdown of Type NC and mastication during the mixing of a batch will produce firm stocks which extrude smoothly through a hot die. Such stocks retain their shape after extrusion and open steam vulcanization.

Fire Hazards and Protection of Rubber Cement

By E. E. TURKINGTON

Electrical Engineer,
Associated Factory Mutual Fire Insurance Companies, Boston 10, Mass.

RUBBER cement coating and spreading processes always have been plagued by relatively frequent fires. Although the peak was reached during the war with greatly increased use of the processes in working reclaim and synthetic rubber, such fires are still six times more frequent today than back in 1941. Almost all these fires—97% of them—are caused by static electricity.

You can't prevent the generation of static electricity. It is produced by the moving parts of machinery, by the fabric, and by the rubber cement. Rubber materials are particularly susceptible to static generation. Since combustible thinner vapors are always present (regardless of the amount of artifical ventilation) at rubber cement dip tanks, at "doctor" knives, and at the surface of freshly coated fabric, static sparks should be prevented in the vicinity of a rubber spreading machine and, in fact, at any place where rubber cement is used.

Hazards of Static Charge

A static charge on the surface of a fabric or web being coated is seldom a hazard in itself because the non-conducting nature of the material limits the energy in a spark from the material to a near-by conductor, if such a spark should occur, but the static charge on the fabric is hazardous because of its ability to induce static charges on nearby conductors, including the bodies of the operators of the machine where, if not conducted safely away, they are likely to accumulate until dangerous sparks can be produced. If the conductors on which static charges are induced are all grounded, the charges will be conducted away harmlessly, but a serious hazard exists when the charged fabric induces a static charge on a nearby conductor which is insulated from ground or is grounded only through an extremely high resistance. The energy in a spark from such a conductor is usually sufficient to ignite the thinner vapors.

It is, consequently, of first importance to ground the frames of all machines at which rubber cement is used, including all metal rolls, metal parts of reels, and rubber cement receptacles. (See Figs. 1 and 2.) Rolls and rotating shafts are often found to be insulated by lubricating oil or grease. Metal hoppers and cement receptacles may be insulated from the machine frame by paint, corrosion, or cement. Rolls and rotating parts should, therefore, be grounded by means of spring-brass or carbon brushes and all insulated or isolated metal parts should be bonded to the frame of the machine or separately grounded.

Even a very small conducting wire would be sufficient to carry the static charges to ground safely but the ground wire should be large enough to be mechanically strong and durable. A No. 4 stranded copper conductor is advised.

The ground wire should be connected to a permanent ground such as a sprinkler or other water pipe. Buried plates or driven pipes or rods are acceptable if water pipes are not available but should be tested periodically so that any impairment will be detected.

While the safe elimination of static electricity from metal machine frames and parts is relatively simple, it is more difficult to discharge it from fabric or other non-conducting materials. It should be eliminated from these materials, however, to remove all possibility of induced charges and because of the possibility that there will be sufficient energy in a spark from a roll or pile of charged fabric to ignite thinner vapors. Grounded metal brushes made with fine brass or bronze wire bristles extending across the full width of the fabric or web are usually needed near the points where static electricity is generated and where tests show static to be present.

Static is generated at the point where a fabric is unwound from the roll at the feed end of a coating machine and at every roll over which the fabric passes. The grounded collector brush should be installed about four inches in the direction of travel from the roll

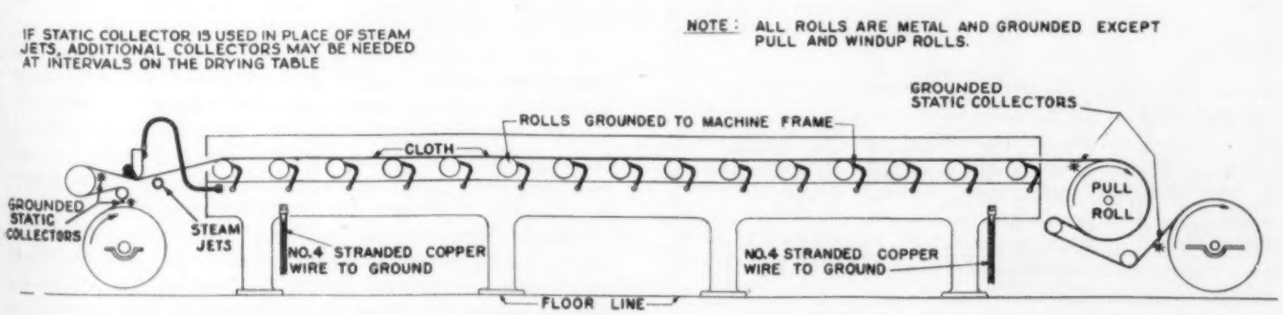

IF STATIC COLLECTOR IS USED IN PLACE OF STEAM JETS, ADDITIONAL COLLECTORS MAY BE NEEDED AT INTERVALS ON THE DRYING TABLE
NOTE: ALL ROLLS ARE METAL AND GROUNDED EXCEPT PULL AND WINDUP ROLLS.
GROUNDED STATIC COLLECTORS
ROLLS GROUNDED TO MACHINE FRAME
CLOTH
GROUNDED STATIC COLLECTORS
STEAM JETS
NO.4 STRANDED COPPER WIRE TO GROUND
NO.4 STRANDED COPPER WIRE TO GROUND
PULL ROLL
FLOOR LINE

FIG. 1—Grounding of spreader machine, showing locations of static collectors and steam jets.

which causes the static, and the ends of the bristles should be between ¼-inch and 1-inch from the surface of the fabric. Contact with the surface is not necessary. Grounded tinsel wound on a bar may be used instead of a wire brush but grounded metal chains dragging on the fabric are not considered satisfactory.

Importance of Humidity

High humidity prevents the accumulation of static charges on the bodies of workmen, on non-conducting fabrics and materials, and on metal parts which are insulated from ground. At a relative humidity of 50% or 60%, a thin coating of moisture exists on most insulating materials, which provides a conducting path to ground for static charges. The fact that humidity is effective is well illustrated by the diagram (Fig. 3). Notice how few fires occur during the humid months of June, July, and August compared with the months when the air indoors is dried by artificial heat.

If the cost of providing high humidity is an important factor or if the humidity has an objectionable effect on the product, static electricity can be eliminated without humidity if a sufficient number of properly designed and grounded wire brushes are installed at proper locations on a machine using rubber cement.

Controlled humidity is effective in preventing accumulations of static electricity on the bodies of workmen. If relatively high humidity is not employed, it may be necessary to provide a semi-conducting floor and conducting footwear for the workmen. Under no conditions should workmen wear rubbers or rubber-soled shoes unless they are made of conducting rubber.

Adequate Fire Protection System

Although a properly installed system of static collectors should prevent all static fires, impairment may occur or fires may be caused by other sources of ignition. Therefore, it is essential that a fully adequate fire protection system be provided.

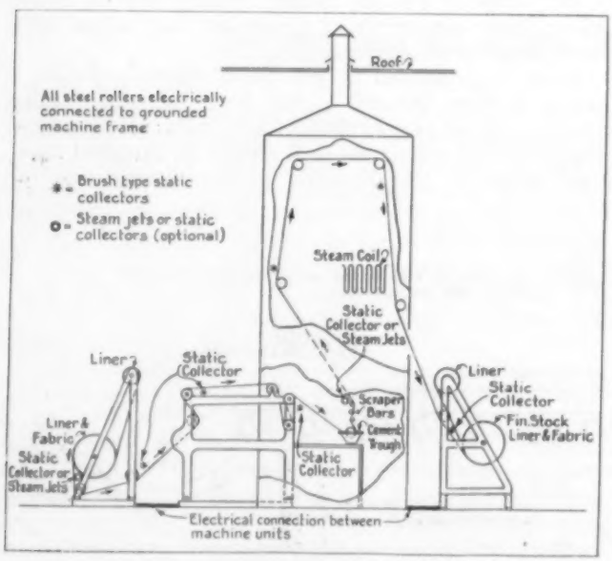


FIG. 2—Vertical cement coating machine.

This protection should consist of the following:

Adequate Ventilation: Provide at least 10,000 cu. ft. of safety ventilation measured at 70°F. in coating and drying enclosures for each gallon of solvent evaporated. The enclosures should be equipped with explosion venting panels and explosion-proof electrical equipment. Fans should be interlocked with the motor so that the machine cannot be operated without ventilation.

Automatic Extinguishing Equipment: Almost needless to say, the entire area should have sprinkler protection. Automatic foam or carbon dioxide, interlocked with ventilating fans, should be installed for protection of the dip or coating tanks, supplemented by automatic sprinklers throughout the enclosures, open sprinklers with manual control being acceptable for the coating section. Water spray nozzles are also effective, but when the cement is diluted with gasoline up to 95% or higher, water spray will control but not always extinguish the fire. Dip tanks should be equipped with trapped overflow drains.

Ample Drainage: Curbs should be installed at room openings and ample capacity floor drains provided. Coating equipment located within manufacturing areas should be enclosed, curbed, and ample floor drains installed within curbed areas.

Location in Well Cut-Off Area: The preferable arrangement is to have the spreading and coating processes in a separate, well cut-off area, free of storage and flammable liquid supplies.

Extinguishers: An adequate supply of hand-operated extinguishers suitable for flammable liquid fires should be kept available for emergencies, and employees should be trained in their use.

Penalties of Inadequate Planning

A review of recent reports of static-caused fires illustrates one vital lesson. Each of the elements of protection outlined above must be considered as a component part of complete protection; anything less than complete—one element lacking or inoperative—is inadequate, and can be dangerous. In many cases, conditions which have combined with or followed the initial flash to allow spread of fire have developed out of inadequate planning of, or insufficient maintenance of, the protective system itself.

A typical fire report from a tire company illustrates three such conditions: (1) Openings in an enclosure for coating fabric with naphtha-thinned cement permitted the vapors to escape into a processing area. When escaping vapors were eventually ignited by a static spark, (2) the automatic spray equipment, because it was partly plugged, was not fully effective when fire flashed over the cement. (3) The drainage from the enclosure was inadequate and allowed the burning liquid to escape to the floor outside the enclosure. Here the liquid spread out and burned for forty-five minutes. The cooling effect of the spray equipment and sprinklers prevented further damage.

Two fires in one plant again emphasize the effects of a "weak-link" in protection. At the first fire, protection included controlled humidity and automatic water spray. The enclosure for the process was curbed and drained. However, no provision of foam or carbon dioxide had been made. Tire fabric was being coated with gasoline-thinned rubber cement in the 12 ft. by 10 ft. enclosure when a static-caused fire started in the wind-up rolls (although all rolls supposedly were

grounded), and traveled back to the tank. Spray nozzles beat down the fire, but when an employee opened the door the blaze spread to the calender, opening eight sprinklers. At this point, the enclosure drains became plugged and burning cement flowed out into the room. Fire loss amounted to $1500.

The second fire, which occurred two weeks later after two carbon dioxide cylinders had been installed at the cementing trough, was completely extinguished in three minutes. Damage, confined to tanks and cement and cleaning up, was $200.

Lack of proper drainage was the major contributor to the rather high fire losses at another time company. The blaze at a fabric coating operation was extinguished by an automatic carbon dioxide system. Three sprinklers above the enclosure had opened, however, and water seeping through openings in the process enclosure overflowed the naphtha-thinned cement. On touching hot metal, the cement re-ignited and opened eight more sprinklers. Damage to equipment, much of it by wet-down, amounted to $2000; but loss of production time reached $6000.

What can happen, on the other hand, when a rubber spreading and drying enclosure is not given special sprinkler protection can be judged by the following $3000 fire. Large hose had to be used at the enclosure where the fire started, and the heavy-pressure streams washed burning cement into an adjoining room where fire spread immediately to bicycle tires and tubes. This opened twenty-seven room sprinklers. These operated for an hour and a half to save the plant, but production was stopped for three days.

Maintenance Is Important Factor

Full-planned protection, competently engineered, is only a part of the answer to static fires. The remainder is careful, constant maintenance. Impaired safety equipment is frequently as dangerous as lack of equipment. Twenty-seven thousand dollars' destruction resulted in one plant when too much reliance for the safety of a cement spreader was placed on a continuous combustible-gas analyzer. Usually reliable, this particular analyzer happened to be inoperative at the wrong time. The result was a severe flammable vapor explosion in spreader enclosures and in the duct system of a solvent recovery system.

Another report shows what good protection can do. A static-caused fire flashed over a cement trough. Automatic foam was protecting the trough and tank, automatic sprinklers the dryers. Well-teamed, simultaneous action of this equipment knocked down the fire in both places before damage could extend beyond a few gallons of cement and several yards of fabric. Expense of cleaning up included, the fire loss was only $300.

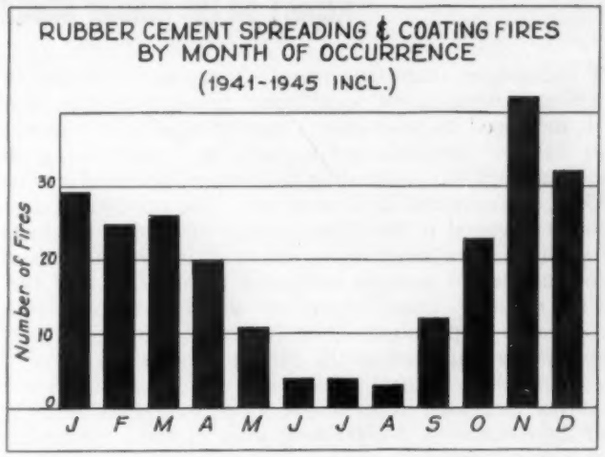


FIG. 3—Data on cement fires.

The value of a well-rounded, well-maintained system of safeguards is illustrated even better by a plant in which six consecutive fires in rubber cement were extinguished without damage to equipment, stock, or building. Protection there consists of automatic carbon dioxide backed up by manually-controlled open sprinklers in the application sections, and an automatic deluge system in the dryer section.

One plant record shows 50 fires. Not flattering to their efforts in static elimination, but the average loss per fire is only $34. Protection includes automatic spray and sprinklers at the fabric-cementing units, adequate curbs and drains, and large portable carbon dioxide extinguishers.

In every instance of a rubber-cement coating and drying process fire caused by static—whether it was quickly brought under control or not; whether damage was severe or negligible—the fire can be traced back to inadequate grounding and humidification. Protection engineers recommend that practical tests be made with a static indicator by running the material through machines with the humidification system operating, but without cement in the tank. Well-grounded static-collecting brushes should be installed at all points where static is found to collect. Careful and frequent tests throughout the area always pay.

Spontaneous Ignition of Rubber Latex Deposits

SPONTANEOUS ignition of deposits of rubber latex recently damaged and shut down a long dryer handling cotton fabric that had been dipped in water- thinned latex. Employees first knew there was trouble when they noticed sparks and burning pieces of fabric at the intake end of the dryer. The unit was of non-combustible construction and had not been sprinklered, despite the combustibility of the cloth. The plant fire brigade used two 50-lb. carbon dioxide, ten 15-lb. carbon dioxide and ten 2½-gallon soda acid extinguishers, but it took a large hose stream operated by the public fire department to really extinguish the fire. Heat and fire damaged the dryer bearings, hydraulic and electrical equipment, and some 600 yards of fabric. Only prompt removal of stock from lower floors prevented more extensive water damage. This and other fires, as well as laboratory tests, emphasize the spontaneous ignition tendencies of the latex and the need for frequent cleaning of dryers. Sprinklers had been recommended in the dryer; they would have extinguished the fire much more quickly, with much less damage.

Factory Mutual Record

Report on the Rubber Manufacturing Industry in South Africa

THE rubber manufacturing industry in the Union of South Africa, well established prior to World War II, increased its production capacity rapidly in response to wartime demands and appears to be continuing its expansion today, according to a report received by the U. S. Department of Commerce. The number of factories engaged in the manufacture of rubber products increased from 58 in 1939-1940 to 70 in 1942-1943, and the number of persons employed from 2,674 to 3,498. The monthly labor report of the Union of South Africa in September, 1946, indicated that 4,330 persons were employed in the rubber factories.

Imports of natural rubber into the Union of South Africa increased from about 9,700 long tons in 1939 to approximately 14,700 long tons in 1944. Supplies of natural rubber prior to the war came mainly from the British rubber producing countries of the Far East. Cessation of supply from that area necessitated procurement from African sources, including Liberia, Belgian Congo, Madagascar, and Portuguese East Africa.

Exports of tires and tubes from the Union of South Africa to other African and British countries increased in quantity by more than 25,000,000 pounds and in value by more than £2,000,000 (South African) from 1939 to the peak year of 1943. In 1943, approximately 23,000,000 pounds of tires and tubes were exported to Egypt, Kenya, and Iraq, presumably for use in the African military campaigns or for redistribution to other countries.

During the war South African plants produced sixty different kinds of tires. The smallest tire produced had an over-all diameter of only ten inches and was for use on the tail wheel of certain aircraft. The largest was more than five feet in height and was made for use on road-building and "breakdown" equipment, approximately 375,000 of these being produced in the Union. The biggest demand was for tires of standard size, and about 500,000 of these were manufactured. Approximately 50,000 airplane tires were manufactured, and nearly 1,000,000 tires of all varieties were delivered to the Army and Air Forces.

In addition to tires and tubes for motor vehicles and giant and solid tires for trucks, South African factories have been producing belting and hose for the country's extensive mining industry, including suction and discharge hose used principally in the mines. They also make airbrake hose used by the railroads, and garden hose, linings for pipes and chutes, molded rubber goods, and certain types of packing, life rafts, waterproof clothing, rubber footwear, tennis balls, and novelty rubber products.

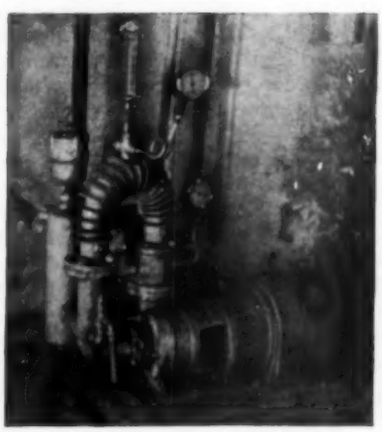
Exports of manufactured rubber products, other than tires and tubes, from South Africa are mainly in hose and a "miscellaneous" class. Rubber hose exports increased from a value of about £10,000 (South African) in 1939 to approximately £48,000 in 1944. Exports of miscellaneous rubber goods rose from about £12,000 in 1939 to nearly £97,000 in 1944. These exports, like those of tires and tubes, went mostly to African countries. A notable exception to this pattern was in exports of hose to India, valued at £11,738 in 1943 and £5,317 in 1944.

Fewer Rejects with High Temperature Condensate Return

WHILE applications of high-pressure condensate return produce impressive savings in any processing operations where quick heating is necessary, according to the Cochrane Corporation, of Philadelphia, Penna., the increased uniform high quality production rates from platen presses such as used in rubber and plastics fabricating are particularly tangible.

In one plant manufacturing gaskets, washers, and miscellaneous mechanical rubber goods, 32 vulcanizing presses are in constant operation. Steam is supplied the presses at 120 to 125 psi. The condensate return system evacuates the molding presses at 85 psi. Previously the returning condensate trapped by gravity was flashed in an open hot-well and was partially wasted. The heat from the 5-psi exhaust of a compressor engine was completely wasted to atmosphere. Now the high-pressure condensate is returned direct to the boiler at a temperature of about 325° F. and the 5-psi compressor exhaust is utilized in heating make-up.

The net results of the installation include fewer rejects with increased production and more accurate timing of the cure period plus 28% fuel saving, the latter due in part to the better heat balance made possible by the use of the previously wasted compressor exhaust.



In this installation 32 presses molding gaskets and other industrial rubber specialties are drained by the Cochrane C-B High-Pressure Condensate Return System. Condensate at 85 psi and 325° F. is returned to the 125 psi boilers.

Editorials . . . . . .

Rubber Prices

SINCE publication of our last issue the spot price of natural rubber has jumped phenomenally, being 19½ cents at this writing (October 14). In most quarters the rapidly increasing price is attributed to the re-entrance of the United States Government into the market as an active purchaser. According to report, the government is anxious to swell its stockpile of natural rubber as quickly as possible at the urgency and insistence of the Army-Navy Munitions Board. Such a situation creates a speculator's paradise and prices are acordingly moved upward.

There is no doubt that the government has decided to increase its rubber stockpile substantially and that its agents are in the market competing with industrial purchasers. However, the reports that the government intends to bring its stockpile to between 500,000 to 1,000,000 tons in a relatively short period are slightly on the fantastic side. In the first place, the Bureau of Federal Supply has only $175,000,000 available until June 30, 1948, for the purchase of all the critical and strategic materials required for stockpile, and cannot secure additional funds except by Congressional action. In the second, serious problems of replacement present themselves as soon as the stockpile reaches more than 500,000 tons.

There is, however, another angle to the present natural rubber price situation which merits immediate attention. GR-S is still available at 18½ cents a pound. There is little doubt that once the price of natural rubber moves into channels above 20 cents a pound rubber manufacturers will begin shifting their compounds to employ larger quantities of the synthetic material in order to maintain their price structures on end products and continue current profit ratios. But because of the recent rather drastic cutbacks in the production of GR-S an odd situation has arisen. GR-S is again in tight supply. The synthetic product can only act as an effective brake on natural rubber prices, irrespective of market influences, if sufficient quantities are available. Perhaps some immediate attention should be given to expanding present GR-S production facilities.

It is not intended that the United States hold the threat of synthetic rubber production over the heads of the natural rubber producers as a Damocles' sword. The fact that such a possibility does exist, however, should serve as an effective warning to the natural rubber producers that it falls within their province to prevent speculation in the natural product. Because both producer and consumer always lose in the final analysis where runaway market prices are concerned on basic commodities, with only a handful of individuals coming out with handsome profits, it is apparent that the question of price should be the number one topic at the next meeting of the International Rubber Study Group.

Division Projects

TWO commendable projects to be sponsored by the Division of Rubber Chemistry, A. C. S., were announced at the meeting of the Division held in New York City last month. The first was the compilation and publication of a monograph on elastomers and the second was the establishment of the world's largest rubber library to be installed at the University of Akron. There is little question but that the monograph will be a self-suporting venture, since there is a real need for such a book, while the establishment of the library will fill a long-felt need for the rubber industry.

The monograph on elastomers will be in the capable hands of C. C. Davis, G. S. Whitby and R. F. Dunbrook as editors. Certain sections will undoubtedly be contributed by leading experts in the various branches of the art. The monograph will probably be handled along the lines of the Davis and Blake "Chemistry and Technology of Rubber," which is considered the "bible" of the rubber chemist and technologist. It is to be hoped, however, that the monograph on elastomers will include a good deal of practical information on compounding and processing methods and procedures, in addition to the theory so close to the chemist's heart.

CURRENT NEWS OF THE MONTH

GOVERNMENT EMBARKS ON NEW STOCKPILING PROGRAM

Although official circles in Washington maintain tight silence, it has become quite apparent in recent weeks that the government has embarked on a natural rubber stockpiling program calling for strategic inventories far in excess of the 160,000 long tons announced officially last spring. This is viewed in rubber trade circles as indicating that a full year's supply, or about 600,000 tons, will be sought over the next six to nine months. The stockpile is now believed to amount to 200,000 tons.

Despite the official silence, it has been learned authoritatively that the government is now actively buying in the New York rubber market. This buying, it is reliably reported, has been the major reason behind the price advance of more than 3 cents a pound in the last month. The procurement program, believed to be inspired by the Army-Navy Munitions Board, is understood to be scheduled to extend into next year, probably through the first half of 1948.

Unlike previous methods of procurement, Government buying agencies are now purchasing on the same basis as regular consumers. This means that buying officials remain in daily contact with the market and buy when prices and supplies appear proper.

Although it is impossible to estimate the exact amounts being bought on this basis, the purchases have been relatively large, judging from the firm tone of rubber prices in recent weeks and the only modest consumer demand which dealers have reported.

Represents Reversal of Plans

The decision to increase the strategic stockpile of natural rubber constitutes a sharp reversal of previously announced plans. As of March 31, 1947, the government had on hand, afloat, or awaiting shipment a total of approximately 315,000 long tons. It was announced that 160,000 tons of this total would be retained as strategic supplies. The balance of 155,000 tons was to be sold to domestic consumers.

About 45,000 tons of this balance was disposed of to industry under a "gentlemen's agreement" whereby industrial users committed themselves to buy high priced stocks bought by the government during the final period of exclusive government buying abroad. This left 110,000 tons to be sold.

But total stocks in the United States were officially reported at 338,382 long tons as of the end of June. Stocks at the end of July were officially reported at 133,976 tons. This substantial decrease was explained by a note to the effect that this figure represented stocks "available to industry." Thus, about 200,000 tons were presumably being held by the government at that time.

At the beginning of September, it was learned that the government was soliciting immediate bids from the rubber trade for 10,000 long tons of natural rubber. The government wanted primarily the highest grades of rubber since government stocks were admittedly composed of mostly lower grades.

The present buying program is now reported to be well in excess of this 10,000 tons, of which about 7,000 tons were procured within a week's time. As with the previous total of 10,000 tons, the government is understood to be interested now only in the higher grades of rubber—ribbed smoked sheets and crepe.

Russian Synthetic Plant

According to newspaper reports from Moscow, workers have reconstructed the synthetic rubber factory at Voronezh which had been razed by the Germans. Production at the reconstructed factory was scheduled to begin by the end of October.

Bulletin on Philblack O

A bulletin on Philblack O, the new type of high reinforcing fine furnace black which embodies many of the virtues of Philblack A plus other features that give it added qualities over channel black, has been made available by the Philblack Division, Phillips Petroleum Co., Akron, Ohio. Entitled "Your Introduction to Philblack O," the bulletin furnishes data on the use of Philblack O versus Philblack A and MPC in natural rubber. Copies are available on request to the company.

Set Up Electronic Laboratory

W. T. LaRose & Associates, Inc., 635 Second Ave., Troy, N. Y., has announced that a complete laboratory is now being maintained with a staff of qualified electronic engineers who devote their full time to experiments and tests to determine the possibilities and advantages of "Thermall" electronic heating equipment on all applications, including the curing of numerous rubber products. The facilities of the laboratory are available to all interested companies.

CARBON BLACK EXPORT SALES SHOW APPRECIABLE INCREASE

Despite talk of dollar shortages, export sales of carbon black have shown a strong upward turn in September, giving carbon black manufacturers a market to offset any cutbacks in the requirements of the United States rubber industry which may materialize this fall, according to a report in a recent issue of the New York *Journal of Commerce*.

No one individual weak spot has developed in any of the larger overseas markets, producers said yesterday. Dollar credits are presenting little handicap and there is a steady call for both furnace and channel black types from such countries as Great Britain, Australia, South Africa, China and South America.

Even in western European countries such as France and Italy, where pleasure driving has been banned, which would seem to cutback demands for tires, the big consumer outlet for carbon black sales has been surprisingly heavy, producers declare.

The optimistic sales trend is attributed to the fact that the bulk of the carbon black is necessary for truck and bus tires and other rubber goods for transportation facilities which foreign countries class as essential to reconstruction.

In addition, carbon black is necessary for compounding footwear and mechanical rubber products which are high on the list of commodities essential to countries abroad.

Domestically, demands from the United States rubber industry have been holding up surprisingly well, producers declare. Executives in the rubber industry had promised increasing cutbacks during the summer and fall. So far, these cutbacks have not materialized and shipments of carbon black to tire and other rubber plants have not shown a noticeable decline.

Carbon black producers look for these domestic shipments to continue at a heavy rate at least through the month of October. November and December may see some slackening, they believe, but this decline should be offset by the export shipments and the over-all production and sales picture for the quarter should favorably compare with previous quarters in 1947.

Third quarter production of both channel and furnace types carbon blacks approximated 160,000,000 pounds. Producers see this level maintained during the fall months.

There are reports that some loss of production will materialize as one leading producer will shut down a major channel plant in the Panhandle area while adjusting its gas supply.

NEW TYPE OF LATEX FILM INTRODUCED BY REYNOLDS

A clear, tough, flexible packaging film cast from a colloidal dispersion of polyvinyl chloride plastic in water is announced by the Reynolds Research Corporation, Gary, Indiana. Called Reynolon, the new film is made from Geon latex, product of the B. F. Goodrich Chemical Company, and is the first free film made from this material.

Reynolon is ideally suited for food packaging and protective coverings of many types, and is well adapted for use on most automatic packaging equipment. It can be sewed or electronically heat sealed, and is available in gauges ranging from 1 to 3 mils (.001 to .003 inches) in widths of 36 to 46 inches. Most important, the new material has excellent resistance to moisture—vapor transmission, good light and heat stability with film thickness controlled to plus or minus .0001 inches. This latter fact is of extreme interest when buying film by the pound and in heat sealing where uniformity is an absolute necessity.

The secret underlying the production of this new film is in the method of formulating the latex and the casting which is done on a continuous stainless steel belt of over 300 feet in length. The belt passes through a specially designed oven where temperatures are automatically controlled to plus or minus two degrees. After passing through the temperatures zones the belt continues back through an area where the film is cooled, stripped and wound on a roll by automatic tension control equipment.

Processing films from latex offer many advantages, such as the elimination of flammable solvents and freedom from solvent retention which is so objectionable in food wrapping. Solids content may run as high as 60 per cent. The band casting equipment used in making this new packaging film is exclusive, having been built and assembled by Reynolds engineers.

The new film can be modified to any degree of stiffness or softness and has glass-like clarity and brilliance. Colors and pigmented films can be supplied for special cases. A wide variety of plasticizers can be used for specific problems and where edibility and contamination are important factors.

Waterproof Snow Mittens

The United States Rubber Company plans to introduce this winter a new type waterproof mitten which has been specifically designed for use by children. The new mittens will have a flannel lining and an outside covering of red rubber. They will be made in three sizes—small, medium and large. Tests on the mittens were conducted last winter by scientists of the company in cooperation with a group of Rhode Island mothers. The mittens are to be distributed under the name of "U. S. Snow Mitt," and will retail at about 79 cents a pair.

To Rebuild Macintosh Works

The works in which Charles Macintosh founded the world's rubber industry more than one hundred years ago are, subject to agreement on details with the City Authorities, to be rebuilt in harmony with the proposed new Civic Centre on the other side of Cambridge Street, in Manchester, England. Under the City's town planning scheme, certain of the old buildings would have to be demolished to allow the road to be widened from 45 to 110 feet and part of the neighboring site of the Gaythorn gas works would therefore be allocated to the Dunlop Tire and Rubber Company for the new modern building now being planned. To allow production to continue during reconstruction, building is planned on a stage-by-stage basis over a period of years.

New Mathematics Laboratories

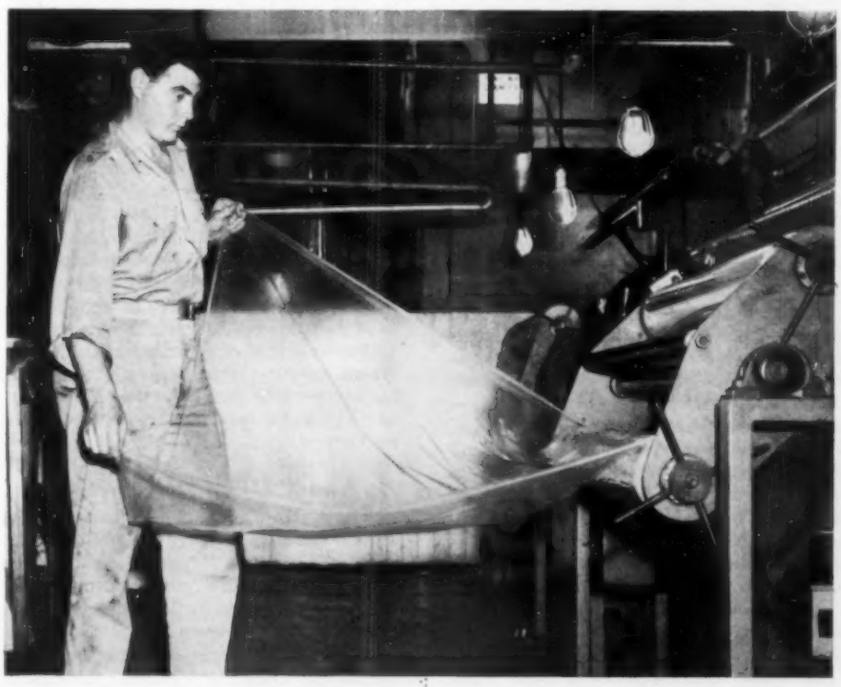
A federal center of applied mathematics—the National Applied Mathematics Laboratories—has been established as a division of the National Bureau of Standards at Washington, D. C. Organized to conduct research and provide services in the field of applied mathematics, the new organization is oriented around modern mathematical statistics as applied to the physical and engineering sciences and to the development and use of modern high speed computing. Dr. John H. Curtiss, who has been the director's assistant in applied mathematics at the Bureau, has been named chief of the new Laboratories.

New Pre-Cure Wax Finish

A new pre-cure wax finish for molded, extruded or calendered rubber products has been announced by Johnson's Wax Co., Racine, Wisconsin. Known as Johnson's No. 3037 Pre-Cure Finish, it not only prevents sticking during storage of pre-cured stock, but serves as a mold release as well. There is no mold "build-up" through carbonizing and the wax finish also eliminates a final cleaning operation. Wax permeates the surface of finished products giving a smooth, satin finish that is completely dry. Being water-dispersed, the wax may be applied without fire hazard. No expensive application equipment is required, as the wax may be economically applied by conventional spray, dip or flow-coat methods.

Joins U.S. Rubber Reclaiming

Jean R. Nesbitt, son of Jean R. Nesbitt, president of the U. S. Rubber Reclaiming Co., has joined that organization as a technical sales representative. He will cover the Ohio and Canadian territories, operating out of Buffalo, N. Y. The younger Nesbitt is a graduate of the Carnegie Institute of Technology, and has been associated with the Continental Carbon Co. for the past seven years, with the exception of some three years spent in the Army. The firm of H. van de Linde, Ltd., of Toronto, which has represented the U. S. Rubber Reclaiming Co. for many years in the Canadian territory, is retiring from business.



Machine operator inspecting the new plastic latex film called Reynolon. Cast on a stainless steel belt, the new film is said to have excellent properties making it ideally suited for the packaging industry.

DIVISION OF RUBBER CHEMISTRY HOLDS MEETING AT NEW YORK

Approximately 850 members attended the Fall Meeting of the Division of Rubber Chemistry of the American Chemical Society, held at the Hotel Commodore in New York City on September 17, 18 and 19, in conjunction with the 112th National Meeting of the parent society. Although the attendance was disappointing, a registration well over 1,000 being expected, the meeting itself was considered satisfactory from all aspects.

The meeting featured the presentation of thirty technical papers, spread out over five separate sessions, a business session, a cocktail party, and the divisional banquet. The cocktail party, held on the ballroom floor of the Commodore on the evening of September 18, preceding the banquet, was again a joint effort of the various suppliers and was judged a huge success. Unlike the initial attempt at the Hotel Carter in Cleveland last spring, sufficient space was available for the large crowd, a number of bars was provided by the hotel, and a plentiful supply of hors d'oeuvres was available.

The technical papers, again grouped by subject as far as possible, were delivered in accordance with the prearranged program, and timing was accurate throughout, due to the cooperation of the authors and officials of the division. Abstracts of all these papers were published in the August, 1947, issue of RUBBER AGE.

New Officers Are Announced

The results of the recent letter ballot for the election of 1948 officers were announced at the business session, held on the afternoon of September 17. Harry E. Outcault, assistant sales manager of the Zinc Oxide Dept. of the St. Joseph Lead Co., of New York, was elected chairman, succeeding W. W. Vogt, development manager of the Goodyear Tire & Rubber Co. Dr. Howard I. Cramer, director of development of Sharples Chemicals Inc., of Philadelphia, is the new vice-chairman. Charles R. Haynes (Binney & Smith) and C. W. Christensen (Monsanto Chemical) were re-elected secretary and treasurer, respectively.

Fifteen divisional directors also were chosen, eleven of them representing the areas in which rubber groups are sponsored by the Division. The area directors are: J. H. Fielding, Goodyear Tire and Rubber Company, Akron; J. C. Walton, Boston Woven Hose and Rubber Company, Cambridge, Mass.; H. E. Elden, Dunlop Tire and Rubber Company, Buffalo, N. Y.; H. A. Winkelmann, Dryden Rubber Company, Chicago; J. H. Ingmanson, Whitney Blake Company, New Haven, Conn.; G. R. Culbertson, United States Rubber Company, Detroit; P. W. Drew, Goodyear Tire and Rubber Company, Los Angeles; Simon Collier, Johns-Manville Corporation, New York; R. E. Morris, Mare Island Naval Shipyard, Northern California; B. S. Garvey, Sharples Chemicals, Inc., Philadelphia, and L. A. Murray, Jr., United States Rubber Company, Providence, R. I.

Also named directors were Mr. Vogt, the retiring chairman, and A. M. Neal, of E. I. du Pont de Nemours & Co., Wilmington, Delaware. C. C. Davis, of the Boston Woven Hose & Rubber Co., editor of *Rubber Chemistry and Technology*, and S. G. Byam, of DuPont, who acts as advertising manager of the journal, are also members of the board of directors.

Several Projects Planned

It was also revealed at the business session that the Division has several projects under consideration, including a monograph on elastomers and the establishment of a comprehensive rubber library. Dr. Davis has been commissioned to approach G. S. Whitby, of the University of Akron, and R. F. Dunbrook, of the Firestone Tire & Rubber Co., to aid him in the editing of the book, which will comprise some 20 main divisions or chapters, a number of them to be contributed by various synthetic rubber experts.

With regard to the library, which has been under consideration for some time by a committee headed by B. F. Garvey, it was indicated that the Division will definitely sponsor such a library at the University of Akron, with $750 already having been set aside for the compilation of a master bibliography of required books and journals, and $1,500 appropriated for scientific and technical journals.

A report of the Membership Committee, headed by J. H. Fielding (Goodyear), indicated that as of September 1 the Division had 1615 regular members and 260 associate members, a total of 1875. Since October, 1946, the Division has acquired 424 new members, 341 being regular members and 83 associate members. Mr. Fielding's committee was commended for its excellent work.

It was also announced that the Division will hold its Spring Meeting at Chicago on April 21, 22 and 23, in conjunction with the 113th National Meeting of the parent society. Headquarters for the Division will be at the Hotel Sherman. The parent society is planning to hold its 1948 Fall Meeting in Washington and a letter ballot indicated that the Division does not intend to meet with the society for that meeting. The Fall Meeting of the Division will probably be held in Detroit.

Banquet Is Big Success

The divisional banquet, held at the Commodore on the evening of September 18, drew almost a thousand members and guests. One of the most unusual entertainment programs in the history of these banquets was presented after dinner. Special tribute was paid by retiring Chairman Vogt to Simon J. Collier (Johns-Manville), who acted as chairman of the local committee in charge of arrangements, and to Jack Hamilton (Binney & Smith), who was in charge of the cooperative cocktail party.

The Suppliers' Cooperative Cocktail Party was made possible by generous contributions from the following: Adamson United Co., Akron Chemical Co., Akron Paint & Varnish Co., Akron Standard Mold Co., American Cyanamid Co., American Mineral Spirits Co., American Zinc Sales Co., Biggs Boiler Works Co., Binney & Smith Co., Black Rock Mfg. Co., Brown Co., Byerlyte Corp., Godfrey L. Cabot, Inc., Callaway Mills, Inc., R. E. Carroll, Inc., Carter Bell Mfg. Co., Celanese Chemical Corp., Cleveland Liner & Mfg. Co., Columbian Carbon Co., Commercial Solvents Corp., Continental Carbon Co., Curran & Barry.

Also Darling & Co., Deecy Products Co., Diamond Alkali Co., Dill Mfg. Co., B. E. Dougherty Co., Dow-Corning Corp., E. F. Drew & Co., DuPont, Eagle-Picher Sales Co., Eastern Magnesia Talc Co., Enjay Co., Russell Farley Co., Farrel-Birmingham Co., Flintkote Co., General Atlas Carbon Co., Givaudan-Delawanna, Inc., B. F. Goodrich Chemical Co., Goodyear Tire & Rubber Co., C. P. Hall Co., Hardesty Chemical Co., W. C. Hardesty Co., Hardware & Supply Co., Harwick Standard Chemical Co., Herron Bros. & Meyer, Herron & Meyer of Chicago, J. M. Huber Corp., Ralph B. Huber.

Also *India Rubber World*, Industrial Rayon Corp., Ernest Jacoby & Co., Chas. Eneu Johnson & Co., Douglas P. Johnstone, Laurie Rubber Reclaiming Co., D. H. Litter Co., Marbon Corp., P. W. Martin Gordon Clays, Inc., Martin Hoyt & Milne, McNeil Machine & Engineering Co., Midwest Rubber Reclaiming Co., Monsanto Chemical Co., H. Muehlstein & Co., National Lead Co., National Rosin Oil & Size Co., National Rubber Machinery Co., National Sherardizing & Machine Co., National Standard Co., Naugatuck Chemical Division, Neville Co., New Jersey Zinc Co., Niagara Sprayer & Chemical Co.

Also Ohio-Apex, Inc., Pennsylvania Industrial Chemical Corp., Pequanoc Rubber Co., Phillips Petroleum Co., Pittsburgh Plate Glass Co., R. B. H. Dispersions, Rare Metal Products Co., Raw Materials Co., Resinous Products & Chemical Co., Rex-Hide, Inc., H. N. Richards Co., Richmond Mica Corp., Ridbo Laboratories, Inc., H. M. Royal, Inc., RUBBER AGE, St. Joseph Lead Co., A. Schrader's Son, Scott Testers, Inc., Sharples Chemicals Inc., Shell Chemical Corp., Shell Oil Co., Werner G. Smith Co., V. L. Smithers Laboratories, Socony-Vacuum Oil Co., Southern Acid & Sulfur Co., Standard Oil Co. (Indiana), Stauffer Chemical Co., Stewart Bolling & Co., Struthers Wells Corp., Synthetic Products Co.

Also Thiokol Corp., Titanium Pigment Corp., United Carbon Co., U. S. Rubber Reclaiming Co., Vansul & Co., R. T. Vanderbilt Co., J. J. White Products Co., L. G. Whittemore, Inc., C. K. Williams & Co., Wilmington Chemical Corp., Witco Chemical Co., Wyandotte Chemicals Corp., Xylos Rubber Co.

COLLYER URGES CONSIDERATION OF INTERNATIONAL POLICIES

A suggestion that appropriate United States government departments consider policies, both domestic and international, that might be adopted to solve the economic and social problems which may arise with the advent of a large world surplus of rubbers, both natural and synthetic, was made by John L. Collyer, president of the B. F. Goodrich Co., in Akron on October 8.

The suggestion was contained in a documentary analysis, the tenth in a series of studies of national and world rubber problems Goodrich has issued, starting in July of 1940. The booklet noted that the economic history of rubber had been marked by great extremes in price and by large-scale regulatory schemes, and stated that the recommendation for government analysis of the problems was made "in the interests of a sound economy in terms of rubber."

"The people should be the ultimate beneficiaries of sound rubber policies in the form of low-cost finished goods and wider use of rubber in many applications made possible by its relatively low cost," the rubber company head declared.

"The time is near," he said, "when decisions must be made as to whether the natural laws of supply and demand will be allowed to operate—as they have in other realms—to make more and better products available at lower cost to more people . . . or whether those laws shall be interfered with and sidetracked by regulatory schemes, pacts and cartels."

Seven Questions Involved

Mr. Collyer said that findings of informed Government agencies would "throw much-needed light" on the following seven "important questions":

1. To what extent did the rubber cartels in the past stimulate or restrict international trade?
2. What was their effect on crude rubber production and employment engaged in it?
3. Did these cartels retard technological and production progress and how did they affect the U. S. A. economy?
4. Did these cartels create economic and social frictions; if so, did they do more damage than the ills they were supposed to cure?
5. Would a new rubber cartel invite the formation of consumer groups and necessitate Government supervision or participation?
6. Can the rubber problems the cartels were designed to solve, be solved in other ways?
7. Can food crops be successfully introduced into rubber-growing lands to help solve the world food problem and sustain these economies, especially during periods when rubber production might be low?

After reviewing the declared objectives and the results of both the Stevenson scheme and the International Rubber Regulation Agreement, the booklet said: "If, in the past, the economics of crude rubber proved to be so complicated that cartelization was not the satisfactory answer, some other method is called for now, inasmuch as the problem of rubber is today more complex than ever," because "a new factor—man-made rubber—must now be reckoned with in world rubber trade."

Coming Events

Oct. 24. Detroit Rubber & Plastic Group, Detroit-Leland Hotel, Detroit, Mich.

Oct. 24. New York Rubber Group, Hotel McAlpin, New York, N. Y.

Nov. 14.—Connecticut Rubber Group. (Site to be selected).

Nov. 21. Chicago Rubber Group, Morrison Hotel, Chicago, Ill.

Dec. 5. Philadelphia Rubber Group, Kugler's Restaurant, Philadelphia, Penna.

Dec. 9. Buffalo Rubber Group, Hotel Sheridan, Buffalo, N. Y.

Dec. 12. Detroit Rubber & Plastic Group, Detroit-Leland Hotel, Detroit, Mich.

Dec. 12. New York Rubber Group, Xmas Party, Hotel McAlpin, New York, N. Y.

Dec. 12. Boston Rubber Group, Xmas Party, Hotel Somerset, Boston.

Dec. 18. Southern Ohio Rubber Group, Miami Valley Country Club, Dayton, Ohio.

Dec. 19. Chicago Rubber Group, Xmas Party, Hotel Morrison, Chicago, Ill.

Deny Price Fixing Charges

The Rubber Manufacturers Association, eight tire manufacturers and ten corporate executives pleaded innocent in Federal Court in New York City on September 16 to the criminal information charging conspiracy to fix prices of automobile tires in violation of the Sherman Anti-Trust Act brought against them on August 18 by the U. S. Department of Justice. Judge Stephen W. Brennan set November 1 for filing of motions on the charges, but trial date was not fixed pending disposition of any motions. Companies involved include Dayton Rubber, Firestone, General Tire, Goodrich, Goodyear, Lee Rubber, Seiberling, and U. S. Rubber.

Highland Chemical Co. Moves

The Highland Chemical Co., distributors of various oils, pigments and chemicals, and sales agents for various concerns, including the Imperial Oil & Gas Products Co., has moved its laboratory and offices from 91 Wall Street to 133 Front Street, New York 5, N. Y.

FARBEN SYNTHETIC PATENTS MAY BE SOLD TO INDUSTRY

Officials of the U. S. Department of Justice at Washington, D. C., claimed another victory on September 27 in its continuing legal efforts to get American assets of I. G. Farbenindustrie, the former German chemical trust, away from the Standard Oil Co. of New Jersey, one-time associate of the German firm.

The department said that it would use such assets as were awarded to it for the purpose of encouraging "free competition in the fields to which they relate." The statement indicated that if final legal findings were for the Government, it would sell to Standard Oil competitors Farben assets in this country.

These assets include "patents basic to the production of synthetic rubber and patents of commercial importance in the field of soap manufacture and the production of toluol, asphalt paving, and hydrogen."

The Justice Department hailed a recent decision of the Circuit Court of Appeals in New York as fully sustaining lower court rulings that Standard companies had engaged in "sham transactions, of a type likely to mislead public authorities" as to Farben's assets in the United States.

"The consequence is," the department said, "that several hundred patents and shares of stock representing substantial interests in companies affiliated with Standard Oil will, under the decision, remain the property of the United States, in charge of the Department of Justice's official of alien property."

Court rulings to date, however, have permitted Standard to recover other patents and stock dealing largely with manufacture of oil and gasoline.

Stand-Eze Softaire Mats

A new non-marking, non-skid rubber mat called "Stand-eze Softaire" for the relief of standing fatigue, has been announced by the Colonial Rubber Company, Ravenna, Ohio. The "Stand-eze" mat is a scientifically designed mat of nearly 2000 small rubber cells, which act individually and collectively to protect legs and feet from nervous strain. Cells of the "Stand-eze" mat are so constructed that they gather and retain air. Thin rubber strips of the toughest rubber criss-cross each small cell, producing a "squeegee" action. Combining the floating action of the air retaining cells, with the "squeegee" action of the thin rubber strips, the Colonial "Stand-eze" mat has a proper resiliency to make standing pleasurable, without any sensation of annoying softness. Available in size 16 inches by 23½ inches, this new Colonial mat comes in three color combinations chosen to subdue footprints; blue and white, gray and white and solid slate gray. The "Stand-eze" mat is also available in neoprene oil-and-grease-resistant rubber at slight additional cost.

Producing Lactoprene EV

The Department of Agriculture has announced that Lactoprene EV, the acrylic rubber developed by the Eastern Regional Research Laboratory, is now being made on a pilot-plant scale at the Government Laboratories in Akron. The material consists of 95% of ethyl acrylate and 5% of 2-chloroethyl vinyl ether. Its production is said to be simpler than that of the butadiene rubbers because polymerization can be carried on at atmospheric pressure in one to two hours.

Lactoprene EV can be vulcanized with numerous agents, including sulfur, and many of the accelerators commonly used with natural rubber and with synthetic rubbers, as well as with certain organic compounds. Thereafter the material has excellent dry heat resistance and can maintain its rubbery characteristics even at 300° F. for more than 700 hours. The vulcanized material has unusually long flex life and excellent resistance to mineral oils, sunlight, and oxidation in air. White products or products having pastel shades can be made.

Detailed information on the compounding and properties of the acrylic rubber has been published in technical periodicals. For samples of the new rubber and additional information write the Eastern Regional Research Laboratory, Chestnut Hill Station, Philadelphia 18, Pa.

Plan Synthetic Resin Symposium

A Symposium on Synthetic Resins Used in Compounding Natural and Synthetic Rubbers will feature the Fall Meeting of the New York Rubber Group, to be held on October 24 at the Hotel McAlpin in New York City. The following will participate in the symposium: K. M. Fox (Dewey & Almy), M. E. Jones (Marbon), W. H. Aiken (Goodyear), T. A. Bulifant (Barrett), J. C. Searer (Durez Plastics), C. W. Eurenius (Hercules Powder), J. E. Pittenger (Goodrich Chemical), and E. N. Cunningham (Enjay). The meeting will be held at 3:15 P.M., with dinner to be served at 6:30 P.M. Entertainment will be offered after dinner. A complete report on the meeting will appear in our next issue.

Speed Rubber Breeding

A new way to step up experimental breeding of rubber trees has been devised by rubber experts of the U. S. Department of Agriculture following hurricane damage to many of the large seedling Hevea trees in Florida. It was found that they could cut back trees of 5 to 8 feet growth, let as many as four new shoots develop, and then topwork with various strains to be tested for production or used for further crossing. Several strains could be grafted on one of these cut-back trees. When grafted to seedling trees of this size, the new strains can be induced to flower within one or two years as compared with four or five years required to bring normally budded trees into bloom.

Osberg Joins General Tire

Edward V. Osberg

Edward V. Osberg, until recently vice-president of the Wilmington Chemical Corporation, and before that editor of the *India Rubber World*, has joined the executive sales staff of the General Tire & Rubber Co. In his new position, Mr. Osberg will be located in Akron, and will promote the sale of carbon black masterbatches developed by General during the war. A program will be set up to assist rubber manufacturers to take full advantage of these combinations made from GR-S and various types of carbon black. Mr. Osberg's previous experience in the rubber manufacturing field includes service with the Simplex Wire & Cable Co. He is a member of the American Chemical Society, the American Institute of Physics, and the New York Chemists' Club. He is also a member of various local rubber groups.

URWA Holds Annual Convention

The 12th Annual Convention of the United Rubber, Cork, Linoleum & Plastic Workers of America (CIO) was held in Boston, Mass., the week of September 15. L. S. Buckmaster was re-elected president for a third term. A proposed amendment to make the office of organizational director elective was defeated by a vote of 312 for and 194 against, a two-thirds majority being required to carry the amendment. The delegates did approve resolutions to amend the union's constitution and permit local unions to assess dues at anywhere from $1.50 to $3.00 a month. A series of amendments designed to bring a greater return into the international's treasury from local dues payments were defeated. A resolution setting forth a synthetic rubber program was adopted in the closing hours of the convention, and the union will ask for representation "on the existing committee which is charged with the future responsibility of the synthetic industry."

Amberlite W-1 Polymer

A new water-soluble polymer with unusual qualities of uniformity and stability, adhesion, compatability and ability to be insolubilized, has been introduced by the Resinous Products & Chemical Co., Washington Square, Philadelphia 5, Penna. Preliminary tests of the new polymer, called Amberlite W-1, reveal its value in the manufacture of wet-strength paper, adhesives and cements, as a thickener for latex and neoprene, and indicate potentialities for reproduction operations, printing techniques, sizing and all types of coatings.

The material is compatible with numerous water-soluble film-formers, such as casein, polyvinyl alcohol, carboxy methyl cellulose, and lecithin; dries to a non-tacky film although it exhibits tackiness similar to a rubber cement during drying; does not support bacterial or fungal growth; and may be insolubilized by heat, formaldehyde or metallic salts. Air-dried films of the versatile polymer are clear, essentially colorless, quite brittle, and show excellent adhesion to paper, fabric and porous surfaces. In dilute solution, Amberlite W-1 will emulsify monomeric plasticizers and Paraplex resins to produce stable emulsions.

Transfers Activities to West

Amecco Chemicals, Inc., announces the closing of its sales offices in the Lincoln Building, New York City, and transfer of offices and manufacturing plant to Henderson, Nevada. Amecco has disposed of its plant at Rochester, N. Y., and has acquired the B.M.I. plant of the Hardesty Chemical Co. at Henderson and will manufacture synthetic detergents, chlorinated organics and synthetic organic chemicals which this plant is now equipped to produce on a large scale. The Hardesty Chemical Co. has underway a considerable expansion program at its plant at Dover, Ohio. Amecco will primarily seek to serve Western markets because of its location and has appointed Mr. Robert W. Fredericks as sales manager and Dr. Ernest B. Rubloff as technical sales development director, both of Los Angeles.

Authorize Belden Offering

Directors of the Belden Manufacturing Co. on September 16 authorized an offering to stockholders of 29,164 shares of stock at $10 par in the ratio of one share for each 10 held by shareholders on record as of September 25. The formal offering was expected about October 2, with rights to expire about October 28. Proceeds will be added to general funds. If all the rights are exercised, total shares of common stock outstanding will rise to 320,804 shares. The company is speeding completion of expansion programs at both its main plant in Chicago and the plant at Richmond, Indiana. Belden is aiming at sales of $20,000,000 this year as compared with $13,000,000 in 1946.

LITCHFIELD URGES CONSUMPTION BE LIMITED TO TIRE PRODUCERS

P. W. Litchfield, chairman of the board of the Goodyear Tire & Rubber Co., asked on October 12 for Congress to enact legislation calling for tire manufacturers to use a minimum of 100,000 tons of American-produced synthetic rubber yearly in their tires, tubes and recapping materials.

"There are nearly 900 manufacturers of rubber products in America," Mr. Litchfield said in the eighth of his series of "Notes on America's Rubber Industry." "If all were placed under compulsion to use a certain percentage of this government-produced synthetic rubber, a highly complicated task of bureaucratic administration and control would be involved.

"On the other hand, there are only 26 manufacturers of tires and tubes. Thus if the compulsion were limited to tire and tube manufacturers which account for 74 per cent of the total American consumption of rubber, the enforcement problem would be vastly simplified and the need for an extensive bureau of control would be eliminated."

Three Specific Suggestions

In making his recommendation, Mr. Litchfield made three suggestions as a means of establishing a fundamental policy of national security:

1. There should be continued government ownership of synthetic plants having a minimum capacity of 600,000 long tons of general purpose rubber. These plants would include only those of highest efficiency and lowest cost performance. Volume of actual production could be held to 100,000 tons yearly. The suggested legislation should fix a minimum synthetic content for certain tires and it would be up to the 26 manufacturers of tires and tubes to assume the responsibility, thus simplifying reports to the government and avoiding complicated enforcement machinery.

2. In addition the government should accumulate, own and control a substantial stockpile of natural rubber as further insurance against emergencies.

3. Finally, the government should see to it that potential rubber-growing areas in the Western Hemisphere are developed to a point where they can be counted on for a minimum annual yield of 100,000 tons.

Mr. Litchfield noted that existing potential capacity of government-owned synthetic plants was 1,000,000 tons and added that the difference between this total and the 600,000 ton capacity deemed adequate for security and use purposes might be disposed of in any manner chosen by the government. "Although considerations of national security must take highest precedence," he observed, "the effort should be to reduce to a minimum government's necessary intrusion in this area of private consumption."

Mr. Litchfield also recommended a lower price for synthetic rubber, stating the government-fixed price is 18½ cents a pound, while natural rubber is approximately 17 cents. (Editor's Note: Natural rubber has since risen above 19 cents.) "Actually," he said, "if natural rubber is worth 17 cents, synthetic rubber should be bringing no more than 14 or 15 cents.

"A price of 15 cents on synthetic," Mr. Litchfield continued, "would enable the government to realize an operating profit if it would, as it should, write off plant costs and not figure plant amortization in the cost of product.

"And why shouldn't these plant investments be written down? The money that went into them was for defense – immediate defense. They were in the same category as battleships, planes or other expendable materials of war. Certainly, it was never contemplated that their original cost should be absorbed by rubber users any more than the cost of battleships should be absorbed by any specific section of our American public."

Mr. Litchfield also urged the encouragement for research and development in synthetic rubber through abandonment of cross-licensing among competing companies. He said: "Everything in our national experience argues that we will get better synthetic rubber more quickly by turning the resourcefulness of industry loose on a competitive basis than by keeping it confined through pools and cross-licensing which preclude one company from getting ahead any faster than its competitors."

Hewitt Rubber is now offering two grades of agricultural spray hose — Monarch and Ajax. Both brands are built to withstand working pressures up to 800 pounds per square inch. The Monarch brand features oil resistance.

Thiokol Type ST Rubber

The availability of Thiokol Type ST, a polysulfide type synthetic rubber polymer that in many properties shows marked improvements over other types of Thiokols, was recently announced by the Thiokol Corporation, Trenton 7, N. J. Notable is the fact that after vulcanization the new polymer is no longer thermoplastic. Its low temperature characteristics are said to be exceptionally good and therefore extractable plasticizers are not required to maintain low temperature flexibility and resilience. Thiokol Type ST is particularly recommended by the manufacturer for compounds that must possess one or more of the following properties: (1) Good low temperature resistance, especially where extractable plasticizers are undesirable; (2) Good solvent resistance in a wide range of solvents; (3) Low swell in solvents; (4) Freedom from shrinkage in low swelling oils and solvents; (5) Resistance to deterioration by sunlight and ozone.

Polyoxyethylene Fatty Esters

Commercial production of a long line of products extending practically throughout the entire range of polyoxyethylene (long chain ether alcohol) fatty esters has been started by the Glyco Products Co., Inc., of Brooklyn, N. Y., and Natrium, W. Va. Members of this nonionic series of compounds are wetting agents, penetrants, and detergents. Also products of this series are lubricants for rubber and plastics, textiles, plasticizers for synthetics and plastics, and spreading and dispersing agents.

AERIAL VIEW OF GOODYEAR'S NEW PLANT IN UITENHAGE, SOUTH AFRICA

An aerial view of the Goodyear Tire & Rubber Co.'s new tire, tube and mechanical goods factory in Uitenhage, South Africa, is reproduced above. Situated on a 67-acre site converted from wild overgrowth, the factory represents a $4,000,000 investment and is the company's 15th foreign operation. Covering 250,000 square feet of floor space, the factory buildings utilize 2,000 tons of steel, 85,000 square feet of glass and 22,000 feet of power cable. Already in production and employing 1,000 South Africans, the factory was formally opened recently by P. W. Litchfield, Goodyear chairman of the board, and officials of the South African government. The word "Bande" in the factory identification is Dutch for "Tires." The famous Goodyear trade-mark is clearly visible.

Offer New Inspection Service

The Crude Rubber Inspection Bureau, Inc., 51 East 42nd St., New York 17, N. Y., has been organized to offer a crude rubber inspection service to the rubber manufacturing field. Staffed by experts who were active during the war in government inspection service, which was most effective in preventing the delivery of qualities which did not meet contract specifications and which resulted in considerable savings in allowances for off-grade deliveries, the facilities of the new private enterprise are of special value to those rubber manufacturers who do not find it practical to maintain a permanent force of inspectors to protect themselves against possible discrepancies in shipments of crude rubber. In addition, the use of the service makes unnecessary the actual delivery of the crude rubber to the manufacturer's plant or warehouse before inspection, since the inspection is made before delivery. A booklet outlining the services offered by the new inspection bureau is available from the company on request. Officers of the company include John P. Carmel, president; George W. Flach, vice-president, and A. A. Hadinger, secretary-treasurer. Joseph S. Cardinale is technical advisor and attorney.

Form Firestone Plastics Co.

The formation of the Firestone Plastics Co., a new subsidiary with Roger S. Firestone as president, has been announced by the Firestone Tire & Rubber Co. Continued expansion of the company's line of plastic products was given as the reason for organization of the new subsidiary. At Pottstown, Penna., a new modern plastics laboratory was recently completed for extensive research and development work. This is in addition to the large producing units installed at the Pottstown plant during 1946 and 1947. At Paterson, N. J., Velon plastics are mixed, extruded and fabricated for use in such products as insect screening and plastic clotheslines. The new Firestone Plastics Co. will manufacture and distribute the complete line of Firestone plastics. Headquarters will be at Akron.

New Type Trolley Guard

The B. F. Goodrich Company has announced the development of a new trolley guard for underground mine service made from Koroseal. Among features of the Koroseal trolley guard, according to the manufacturer, are its tear strength, with the heavy edges designed to promote better hang, also providing extra protection against trolley pole damage; it is flame resistant; the breakdown voltage tested in air according to A.S.T.M. specifications exceeded 20,000 volts; and it is resistant to acids and fumes as well as mildew.

Brown Named Vice-President

Owen J. Brown, Jr.

The election of Owen J. Brown, Jr., general sales manager, as a vice-president of Godfrey L. Cabot, Inc., was announced on September 30 by Thomas D. Cabot, vice-president and treasurer of the company. Mr. Brown joined the Cabot company in Boston soon after he had been graduated with a degree of B.S. in Chemical Engineering by Tufts College in 1935. For five years he did research at the company's laboratories in Boston and at Cabot carbon black plants in the Southwest, particularly in the applications of carbon black as a pigment in rubber, paint, lacquer, printing ink and plastics. From research and development, Mr. Brown changed over to Cabot Technical Sales and Service. When this department was reorganized and expanded in 1945, he was placed at its head.

Hydroquinone Derivatives Available

The Tennessee Eastman Corporation, Kingsport, Tenn., is now making available in commercial quantities a number of hydroquinone derivatives which until recently were obtainable only in laboratory amounts. Some of these derivatives are of direct interest to the rubber industry. For example, 2,5-ditertiary butyl hydroquinone has been found suitable as a preservative in both natural and synthetic rubber compositions. It is also a good polymerization inhibitor for styrene and other resin monomers. Non-staining and non-discoloring, it is said to be particularly useful for stabilizing latices and white stock such as are employed in many mechanical rubber processes. According to Tennessee Eastman, this is the first non-staining antioxidant for rubber that has appeared in several years.

An Index to Volume 61 of RUBBER AGE will be found on Pages 119 to 122 of this issue.

Controls Panhandle Carbon Co.

The interest of the Phillips Petroleum Co. in the Panhandle Carbon Co. was recently purchased by the Witco Chemical Co. In 1933, Robert I. Wishnick acquired the Panhandle Carbon Company, located at Borger, Texas, and shortly thereafter disposed of half interest to the Phillips Petroleum Company which has, since that time, supplied the natural gas necessary for the operation of the plant. Mr. Wishnick was elected president of Panhandle Carbon Company and still serves in that capacity. When it became evident in 1944 that additional supplies of channel carbon black were essential for war purposes, the Panhandle Carbon Company was first to submit plans to the War Production Board for an additional plant to be located at Witco, New Mexico, and brought the plant into operation within a period of five months. All the production of channel carbon black by Panhandle Carbon Company will be marketed, as in the past, by the Witco Chemical Company.

Beta-Propiolactone Developed

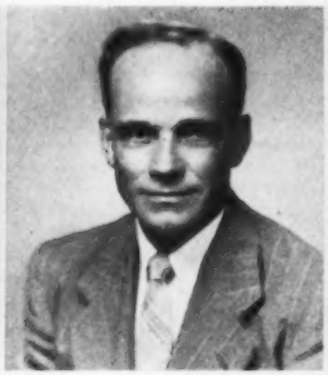
The development and availability on a limited scale of beta-propiolactone, a new organic chemical material which promises to become as important to the chemical industry as acetylene or chlorine, has been announced by the B. F. Goodrich Co., Akron. Substances which may be made from the new material range from the liquid used in setting permanent waves to materials used in leather processing. It may also be used in essential ingredients for certain of the synthetic rubbers, as well as rubber compounding chemicals and solvents and some of the polyblends. Reference to the development of beta-propiolactone was made at the recent 112th meeting of the American Chemical Society in New York City in a paper by Drs. T. L. Gresham and J. E. Jansen, Goodrich research chemists.

Article on Synthetic Blends

The growing use of synthetic rubber in the manufacture of finished plastics is the subject of an article in the current issue of "The Lamp," house organ of the Standard Oil Co. of New Jersey, 30 Rockefeller Plaza, New York 20, N. Y. Alloyed with synthetic rubber, states the article, plastics can be used to make such new and varied items as kitchen floor tiling so tough, resilient, and unaffected by oils and grease that it can serve also for garage floors; tissue-thin, transparent food wrappers that will not crack under freezing temperatures, and fenders that will bounce back to their original shapes after being bumped. The article predicts that as an alloy for polyvinyl chloride alone, only one of the 30 basic resins used in the manufacture of plastics, 40 to 60 million pounds of nitrile rubber will be ultimately required annually.

SERIES OF PERSONNEL CHANGES IS ANNOUNCED BY NAUGATUCK CHEMICAL DIVISION OF U. S. RUBBER CO.

Albert W. Holmberg
named as manager



Gerald L. Dennis
transferred to Philadelphia

Robert R. Sterrett
New York representative

Clarence Sigler
special representative

Albert W. Holmberg has been named manager of latex, Lotols and dispersions for the Naugatuck Chemical Division, United States Rubber Company, it has been announced by George R. Vila, manager of colloids and plastics for the division. Mr. Vila also announced the transfer of Gerald L. Dennis from the New York area to the Philadelphia area. Dr. Robert R. Sterrett is rejoining the company to replace Mr. Dennis as New York area representative. Clarence H. Sigler is made special technical representative on Mr. Holmberg's staff.

Mr. Holmberg has been with the rubber company since 1909, except for a period of military service during World War I. Starting as a laboratory technician in the Mishawaka plant, he was later transferred to the General Laboratories in New York and then to New Haven where he served as laboratory assistant and chemist. He joined the Naugatuck staff in 1929 and for many years directed development work on latex and dispersions. For the last four years he has been in the sales department at Naugatuck.

Mr. Dennis was graduated from Nebraska State Teachers College and obtained a Master of Arts degree at Colorado State Teachers College. He was chemistry instructor and athletic coach in Nebraska high schools until 1941, when he became senior supervisor at the Kankakee Ordnance Works, operated first by E. I. du Pont de Nemours & Company and later by U. S. Rubber. After the war, he was transferred to the Lotol laboratory in Naugatuck and in 1946 was made New York area sales representative.

Dr. Sterrett studied at Purdue University and then obtained a Ph.D. degree at the University of Illinois in 1935. The following year he started development work on Lotols, synthetic rubber and other products at Naugatuck Chemical. Since 1943 he has been development director for Julius Schmid, Inc., at Little Falls, N. J.

Mr. Sigler attended Kansas City Junior College and the University of Kansas. In 1942 he joined the technical department of Pennsylvania Ordnance Works, operated by U. S. Rubber. The next year he started three years of research in latex and dispersions at the Naugatuck plant, entering the sales department in 1946.

Announce Borger Plant Staff

U. S. Rubber Co. has announced formation of a staff to operate the government-owned synthetic rubber plant in Borger, Texas. The plant was built and formerly operated by the B. F. Goodrich Co. George A. Graham, formerly manager of the synthetic rubber plant at Institute, W. Va., is the new factory manager at Borger. J. Warren Braley has been transferred from Los Angeles to Borger as production superintendent, while Carl W. Walden, also from Los Angeles, will be chief chemist. Three additional men from the Institute plant are being transferred to Borger, these being T. A. McCoy, plant engineer, Robert E. Waite, industrial relations manager, and Oscar Zellweger, control manager. Philip E. Rice, until now factory manager at the Los Angeles synthetic rubber plant, has been transferred to the Institute plant to succeed Mr. Graham.

Hercules Powder Co. has announced that for the first time in six years Parlon, its chlorinated rubber base for concrete paints and other protective coatings, is readily available. Completion of new production facilities makes it possible.

Seek New Safety Members

Robert M. Boyles, director of industrial relations of the Midwest Rubber Reclaiming Co., East St. Louis, Ill., has been named Roundup Boss of the Rubber Section of the National Safety Council, as part of the Council's Fall Roundup drive for new members. The Roundup slogan is "Every Member Get a Member." The Rubber Section campaign will stress the fact that it is a rubber industry project in which the Section's activities are managed and directed by an executive committee composed wholly of rubber industry men serving on a voluntary basis. Participation by as many companies as possible will increase the value of the work of the Rubber Section.

Heel for Cowboy Boots

A rubber heel for cowboy boots is now being manufactured by the Shoe Products Division of the B. F. Goodrich Co. It is now being offered to shoe manufacturers and the repair trade. Made with a wood core, the new heel is molded with proper taper to fit a cowboy boot. According to Goodrich, it will prove more desirable than the full leather heel.

Texon Purchases DuPont Plant

Sale of its Russell, Mass., plant to Texon, Inc., a newly-formed corporation, was announced by E. I. du Pont de Nemours & Co., Inc., on September 29. DuPont officials said that the principal reason for the sale of the plant, originally acquired in April, 1942, was that the original purposes for purchasing it no longer existed. Three of the principal officers of Texon, Inc., are men who have been active in the operation of the plant and are leaving DuPont to assume their new posts. They are M. J. Vittengl, plant manager, who is president of the new firm; J. J. Uber, chief chemist, who is vice-president in charge of research, and D. F. Mulvihill, production manager, who is vice-president in charge of production. David R. Schoales is treasurer. Texon, Inc., will continue the manufacture of coated fabrics.

A new bulletin describing the use of Staybelite Resin in rubber has been made available by the Naval Stores Department, Hercules Powder Co., Wilmington, Del. The physical and chemical properties of the material, which is hydrogenated rosin, are given in the bulletin.

NAMES IN THE NEWS

JOHN E. PAYNE, formerly manager of industrial sales, has been named manager of all industry sales department for the Westinghouse Electric Corporation, Pittsburgh, Penna. He will have general over-all responsibility for sales of equipment to all industries.

WILLIAM M. DOUGHERTY, associated with the U. S. Rubber Co. for the past 25 years, and assistant secretary since 1941, has been named assistant to the president of the company. He will also continue to function as assistant secretary.

J. H. STEPHENS, who joined the Goodyear Tire & Rubber Co. as a member of the export division in 1925, has been named assistant manager of the company's storage battery and brake lining department, succeeding K. D. KIENTH, who has resigned to re-enter the Army as a major.

F. HOWARD SMITH, assistant export sales manager of the General Tire & Rubber Co., has joined the executive staff of the General Tire & Rubber Co. of South Africa, Ltd., which will soon begin manufacturing General tires and tubes at its new plant in Port Elizabeth, South Africa.

JAMES D. WASER, associated with the industrial rubber products field for many years, has been appointed manager of molded goods sales for the Hewitt Rubber Division of Hewitt-Robins, Inc., Buffalo, N. Y. He is a graduate of Franklin and Marshall College.

J. M. LINFORTH, vice-president of the Goodyear Tire & Rubber Co., was honored with a luncheon on October 7 at Akron to commemorate his twenty-fifth anniversary with the company. He joined Goodyear in 1922 as a salesman in the Baltimore territory.

J. G. SLATER, formerly treasurer of the Triangle Conduit & Cable Co., New Brunswick, N. J., has been elected vice-president and treasurer. V. V. MCKAY, formerly assistant to the president, has also been named a vice-president.

WILLIAM CLAUSEN, formerly vice-president and general manager of the Victory Products Corporation of Hagerstown, Maryland, is now manager of operations for the Farnsworth Television & Radio Corp., Fort Wayne, Ind.

MURRAY H. OWEN, manager of sales of the York Wire and Cable Section of the General Electric Co., has been appointed manager of sales of the company's Wire and Cable Division.

JOHN W. SOLOMON, former owner and manager of Marjon Fashions, and previously vice-president of Avondale Mills, has been appointed general sales manager of the textile division of the U. S. Rubber Co.

THEODORE A. WERKENTHIN, principal materials engineer in charge of the rubber and plastics section at the Bureau of Ships of the Navy Department, has been appointed chairman of the Technical Committee on Rubber Products of the Federal Specifications Board. He succeeds P. L. WORMELEY, who resigned after serving for 21 years.

WALTER E. SHIVELY, manager of tire design for the Goodyear Tire & Rubber Co., was recently presented the gold medal of the Litchfield Special Award of Merit in recognition of his efforts in directing development of the company's new Super Cushion tire.

DR. HOWARD E. FRITZ, vice-president in charge of research of the B. F. Goodrich Co., has been elected to the Alumni Advisory Board of Ohio State University. He is a graduate of the university and was a faculty member before joining Goodrich.

WARD L. ATWOOD, assistant to the president of the Woburn Chemical Co., has been named sales manager of the company, succeeding Richard O'Rourke, who recently resigned because of ill health. The latter, however, will continue to advise the company on special industrial relations projects.

JOSEPH C. MIRGUET, formerly vice-president of the Hickok Manufacturing Co., has been named vice-president of the Plymouth Rubber Co., Canton, Mass.

DR. WENDELL P. METZNER, a research group leader at the Central Research Department, has been promoted to associate director of research of the Rubber Service Department of the Monsanto Chemical Co. He will be stationed at Nitro, West Virginia.

MARK J. STURTEVANT, manager of coated fabrics development of the Goodyear Tire & Rubber Co., Akron, was recently awarded a certificate of commendation for outstanding service to the U. S. Navy during World War II.

JOHN B. DENNIS, formerly associated with the B. F. Goodrich Co., and CHARLES L. SMITH, formerly with the Naval Air Experiment Station at Philadelphia, have joined the staff of Battelle Institute, Columbus, Ohio, to engage in research in rubber technology.

C. H. SLATER, formerly sales manager of the Fine Chemical Division of the J. T. Baker Chemical Co., Phillipsburg, N. J., has been promoted to assistant general sales manager of the company. He will, however, continue to devote a major portion of his time to management of the Fine Chemical Division.

DR. E. S. BLAKE, associated with the Rubber Service Department of the Monsanto Chemical Co. since 1936, and a group leader in that department since 1942, has been appointed assistant director of research for the company's Merrimac Division at Everett, Mass.

R. S. WILSON, vice-president in charge of sales of the Goodyear Tire & Rubber Co., marked his thirty-fifth anniversary with the company last month.

DR. H. E. SIMMONS, who has served as president of the University of Akron for the past 14 years, has announced that he plans to retire in June, 1951, after he reaches his 65th birthday. University regulations require faculty members and administrators to retire at that age.

ARNOLD H. SMITH, acting managing director of Monsanto (Australia) Pty., Ltd., and well known to the rubber industry due to his former work with Monsanto's Rubber Service Department, has been elected vice-president and a member of the board of directors of Monsanto (Canada) Ltd. He will assume his new duties at the turn of the year.

RALPH M. REEL, who has been associated with the Pharis Tire & Rubber Co. for the past 21 years, and who has been vice-president in charge of research and development for the past few years, has resigned from the company. He plans on re-entering the rubber industry in the Akron area shortly.

H. R. CHILD, who first joined the Goodyear Tire & Rubber Co. as a member of the materials division in 1913, has been named plant manager of the special products manufacturing division which will occupy space in the recently-acquired Plant C at the Goodyear Aircraft plant in Akron.

FREDERICK P. JECUSCO, well-known rubber technologist, who was associated with the mechanical fabrics division of the U. S. Rubber Co. at Providence, R. I., for many years, and who has been with WPB and WAA for the past five years, is now in Tokyo as chief of the Industrial Planning and Analysis Unit of the Planning Board Section.

An Index to Volume 61 of RUBBER AGE will be found on Pages 119 to 122 of this issue.

Publish New Rubber Journal

The British Rubber Development Board, Market Buildings, Mark Lane, London, E.C. 3, England, has begun publication of "Rubber Developments," a new, pocket-size quarterly rubber journal, the objective of which is to increase the consumption of natural rubber through the development of new applications. The new journal is addressed to the potential user of rubber rather than to the rubber manufacturer. The first issue of "Rubber Developments," carrying a September, 1947, dateline, contains articles on the "Rehabilitation of Rubber Estates in Malaya," by Sir Eric Macfadyen, "Liquid Latex Comes of Age," by Arthur Nolan, "Engineering with Rubber," by J. P. Lawrie, "Latex Processes and Potentialities," by W. H. Stevens, "Positex," by C. M. Blow, and "United States Rubber Policy," by Warren S. Lockwood. No charge will be made for the new journal. The British Rubber Development Board is a non-profit making organization, whose funds are derived from a cess on raw rubber exported from the British producing areas.

Tire Shipments in August

Shipments of passenger car tires in the month of August amounted to 6,174,656 units, an increase of 1.03% over the 6,111,564 units shipped in July, according to the Rubber Manufacturers Association. Production for the same period was 5,820,172 units, against 5,474,573 units in July, an increase of 6.31%. Total manufacturers' shipments of passenger car tires for the first eight months of 1947 amounted to 48,628,603 units, as compared with 41,182,680 units for the corresponding period of the previous year. Shipments of truck and bus casings in August amounted to 1,345,593, an increase of 1.24% over the 1,329,077 shipped in July. Shipments of passenger and truck and bus tubes in August were 6,498,948, a gain of 4.55% over the 6,216,248 in the previous month.

Consumption Dips in July

Consumption of natural and synthetic rubber in July amounted to 78,309 long tons, a decrease of 7.99% from the 85,109 (revised) tons consumed in June, according to the Rubber Manufacturers Association. July consumption consisted of 40,284 tons of natural rubber and 38,025 tons of synthetic, the latter broken down as follows: GR-S, 31,007 tons; Butyl, 4,178 tons; neoprene, 2,534 tons; nitrile rubbers, 306 tons. Reclaimed rubber in July represented consumption of 21,025 long tons, a drop of 1.21% from the 21,283 tons consumed in June. Consumption of crude rubber in the first seven months of the current year amounted to the all-time record of 650,293 long tons, an increase of 13.97% over the 570,578 tons consumed in the corresponding 1946 period.

Sears Joins Rubber Association

W. J. Sears

W. J. Sears, who recently resigned as Chief of the Rubber Division, Office of Materials Distribution, Department of Commerce, has joined the Rubber Manufacturers Association, which maintains headquarters at 444 Madison Avenue in New York City, as vice-president. Mr. Sears served the rubber manufacturing industry through the war and reconversion periods in several key Government positions. He entered Government service in July, 1941, with the Office of Production Management, and served successively with the War Production Board, the Civilian Production Administration, and the Office of Materials Distribution. In WPB he was Assistant Director of the Rubber Bureau, and in CPA was Director of the Rubber Division. Mr. Sears, therefore, brings to his new position considerable familiarity with the problems of the rubber manufacturing industry. Prior to the war, Mr. Sears was employed by the United States Rubber Company in Detroit, Michigan. He is a native of Columbus, Ohio.

New Goodyear Shifts Announced

Several changes have been made in the personnel of the Chemical Products Division of the Goodyear Tire & Rubber Co. to handle rapidly expanding sales activities of this division. E. E. Ellies, with Goodyear for 17 years, has been named assistant general manager of the division, reporting to C. P. Joslyn, general manager. Robert C. Hogan, of the Aviation Products Division at Los Angeles, has been transferred to Akron as manager of the Airfoam department. W. E. Weller, operating manager of the Airfoam department, has been elevated to a similar post for the entire Chemical Products Division, reporting to Mr. Ellies. J. A. Bernel has been named assistant manager of the Airfoam department, reporting to Mr. Hogan.

Form Division of Atomic Physics

The National Bureau of Standards has formed the Division of Atomic Physics in which the main Bureau activities relating to atomic and molecular physics have been grouped together. Six sections make up the new division: Spectroscopy, Electronics, Mass Spectrometry, Radioactivity, X-Rays, and Atomic Physics. Some of these sections are engaged on work closely related to synthetic rubber. For example, the infrared laboratory of the Spectroscopy Section is extending the field of infrared spectroscopy, increasing the knowledge of molecular structure and applying results to the structure of synthetic rubbers, while the Mass Spectrometry Section is applying this important research tool to the control of production of synthetic rubbers, as well as to chemical analysis and the structure of organic plastics. Dr. E. U. Condon, director of the Bureau, has assumed charge of the new division. Dr. Robert D. Huntoon has been named assistant chief.

Improved Sulfur Promised

A new process for the manufacture of its well known line of insoluble sulfur, which will provide lower cost material for the rubber industry, major consumer of the product, was recently announced by the Stauffer Chemical Co. The development of the new process, said to be radically different from the old, has been under way for a number of years. Installation of the first unit for the new process is expected to be completed before the end of the year, and will provide much needed additional capacity. The first unit to use the new method is located at the Chauncey, N. Y., plant of the company, where it will supplant the original process employed since 1934. In addition, the company has operated the older process at Stege, Calif. Stauffer Chemical's insoluble sulfur is well known to the rubber industry as Crystex.

Form ACS Trenton Section

A new local section of the American Chemical Society has been established at Trenton, N. J. The new unit, originally organized as the Trenton Chemical Society, comprises chemists and chemical engineers of Mercer County, N. J., except for the area served by the Princeton Section. N. Richard Yorke, of the St. Regis Paper Co., Trenton, who was elected president of the Trenton Chemical Society for 1947-48, continues as chairman of the new Trenton Section. Other officers include Carl W. Virgin (Vulcanized Rubber), vice-chairman; Francis G. Mendrey (H. N. Richards), secretary, and John J. De Munnik (American Tile & Rubber), treasurer.

A new heavy-duty industrial apron made of clear Koroseal film has been announced by Goodrich. Made in two sizes, one 29 by 35 inches weighing 14 ounces and the other 35 by 45 inches weighing 1½ pounds, the aprons are of tape, hem and grommet construction.

SOFTBALL TOURNAMENT FEATURE OF CONNECTICUT GROUP OUTING

The second annual outing of the Connecticut Rubber Group attracted approximately 90 members and guests to Eichner's Farm, Trumbull, Conn., where the event was held on September 12, 1947. The outing committee, including Roger C. Bascom (Goodrich Chemical), Stuart M. Boyd (U. S. Rubber), and William J. O'Brien, Jr. (Seamless Rubber), arranged for a number of sporting events highlighted by a softball tournament. The New Haven Rummies, the Bridgeport Cop Dodgers, Naugatuck Valley Bums and the Palavering Peddlers all participated. The Naugatuck Valley Bums, piloted by Tom Skipp (U. S. Rubber), outlasted the New Haven Rummies, managed by Whitey Larson (Whitney Blake), to win the tournament.

In the other events, Whitey Larson and H. F. Bethel (Vanderbilt) won the sack race. The three-legged race was won by Ed Valois and Al Crapo both of U. S. Rubber. Bill Fairclough (Enjay), Ed Valois, Stewart Gocher (Du Pont), Bob Blake (U. S. Rubber) and R. S. Potter (Armstrong) were declared winners in the horseshoe tournament. Tug-O'-War contests ended in victory for the team captained by Don Spengler (Sponge Rubber Products).

Those contributing to the prizes included Advance Solvents & Chemical Corp., Allison Co., Aluminum Flake Co., American Cyanamid Co., American Zinc, Lead & Smelting Co., Armstrong Rubber Co., Bakelite Corp., Barrett Division, Binney & Smith Co., Black Rock Mfg. Co., Whitney Blake Co., Bunatak Chemical Co., Brockton Machine Co., Brooklyn Color Works, Godfrey L. Cabot, Inc., Carter Bell Mfg. Co., Colloids, Inc., Consolidated Products Co., Connecticut Hard Rubber Co., Cooke Color & Chemical Co.

Also DuPont, William D. Egleston Co., Emery Industries, Inc., Enjay Co., Farrel-Birmingham, Inc., General Latex & Chemical Corp., Givaudan-Delawanna, Inc., B. F. Goodrich Chemical Co., P. W. Martin Gordon Clays, Inc., C. P. Hall Co., Harmon Color Works, Inc., Harwick Standard Chemical Co., Herron Bros. & Meyer, Hird & Connor, Inc., J. M. Huber, Inc., R. B. Huber, *India Rubber World*, Malrex Chemical Co., Midwest Rubber Reclaiming Co., Monsanto Chemical Co., H. Muehlstein & Co.

Also National Sherardizing & Machine Co., Naugatuck Chemical, A. C. Nispel, Inc., Neville Co., Oakite Products, Inc., Pennsylvania Industrial Chemical Corp., Pequanoc Rubber Co., Phillips Petroleum Co., Pittsburgh Plate Glass Co., RUBBER AGE, Raybestos-Manhattan, Inc., A. Schrader's Son, A. Schulman, Inc., Seamless Rubber Co., Sharples Chemicals Inc., Stamford Rubber Supply Co., Stewart Bolling & Co.

Also Thiokol Corp., Wm. R. Thropp & Sons Co., Titanium Pigment Corp., United Carbon Co., R. T. Vanderbilt Co., Vansul & Co., L. G. Whittemore, Inc., C. K. Williams & Co., Charles T. Wilson Co., and Witco Chemical Co.

Test for Shock Resistance

A cone-shaped plunger is rammed into tires at the Firestone laboratories to test their resistance to severe road shocks. This special hydraulic test machine is typical of those used by the industry to protect the motorist.

Akron Group Hears Berggren

Dr. W. P. Berggren, technical representative of the Aerojet Engineering Corp. of Azusa, Calif., a subsidiary of the General Tire & Rubber Co., was the principal speaker at the meeting of the Akron Rubber Group, held at the Mayflower Hotel in Akron on October 16. Speaking on the "Commercial Application of Rocket Power," Dr. Berggren described the manufacture and application of JATO, the jet-assisted take-off motor made by his company. He described it as a metal bottle about 10 inches in diameter and 2 feet in length, weighing about 200 pounds before firing. The bottle contains a solid, asphalt-like combustible material, which burns only under high pressure, and is fired by an initial black powder charge similar in action to the fuse of a shell. Dr. Berggren also presented motion pictures of JATO units in action.

Martin Adds to Sales Staff

The addition of three new members to its sales and technical service staff has been announced by the Plastics and Chemicals Division of the Glenn L. Martin Co., Baltimore, Maryland. The new members, all of whom will report to H. M. Parsekian, director of sales and technical service, are Willard de C. Crater, formerly supervisor of the vinyl plastics plant of the Federal Telephone & Radio Corporation; Eugene C. Hilkert, whose experience includes work on butadiene and styrene production and development with the Koppers Company; and Ira B. Wheeler, Jr., formerly connected with the Cordo Chemical Co. T. F. Montgomery, associated with the Chemicals Plant Division of the Blaw-Knox Co. for the past nine years, has been named head of the engineering section of the division.

POOCK TALKS ON MOLDS TO SOUTHERN OHIO GROUP

H. O. Poock, chief tool engineer of the Inland Manufacturing Division of General Motors, addressed the second semi-annual technical meeting of the Southern Ohio Rubber Group held at the Gem City Club, Dayton, Ohio, on October 9, 1947. Jack Feldman (Inland Mfg.) was designated as general chairman for the meeting. He was assisted by Roger Hickernell (Inland Mfg.) and Robert Radow (Dayton Rubber), chairman and vice-chairman of the Group.

The subject of Mr. Poock's address was: "Molds as Applied to Rubber and Plastics." His discussion covered all the types of mold equipment and vulcanizing presses as well as mold terminology. Featured with his talk were slides showing simple and intricate molds, the equipment used for finishing and trimming rubber products and the various methods of manufacturing molds.

Following Mr. Poock's talk a pre-arranged round-table on mold problems was held, several questions having been submitted prior to the meeting. Mr. Poock was assisted in answering the questions by Ray Fogle, James Hutchison and Don Fair, all associated with the Inland Manufacturing Division of General Motors Corp. Questions on rubber technology were handled by Mr. Feldman.

Following presentation of the talks, a brief intermission was held during which some group singing was led by Mr. Hickernell. The concluding feature of the evening was the showing of the sound color film made by the Mid-West Rubber Reclaiming Co. which depicts rubber reclaiming operations. Alvin Fuhrmann, of the Mid-West concern, made a few brief remarks regarding the film.

Connecticut Names 1948 Officers

The recent letter ballot of the Connecticut Rubber Group resulted in the election of the following officers for the 1947-48 season: Chairman, Raymond H. Dudley (Whitney Blake); Vice-Chairman, Stuart M. Boyd (U. S. Rubber); Secretary, Donald Spengler (Sponge Rubber Products); Treasurer, Carl Larson (Whitney Blake). The following directors were also selected: Edmund J. Butler (General Electric) and Alfred J. Jennings (DuPont). Other directors are Frederick W. Holbrook and Roger C. Bascom.

Chicago Meets November 21

The next meeting of the Chicago Rubber Group will be held on Friday evening, November 21, at the Morrison Hotel in Chicago, Ill. The meeting will feature a talk on "Managerial Control Tools for Profit" by Benedict Sayre, head of the company bearing his name. Mr. Sayre is an active consultant on industrial relations and management and will discuss some phases of the profit structure in our complex modern industrial organizations.

PALMER DISCUSSES RECLAIM BEFORE BOSTON RUBBER GROUP

Dr. Henry F. Palmer, who was associated with the Firestone Tire & Rubber Co. for some twenty-five years, and who is now conducting a consulting organization in the Akron area, was the principal speaker at the Fall Meeting of the Boston Rubber Group, held at the Somerset Hotel in Boston, Mass., on October 3rd. Approximately 325 members and guests were in attendance.

Discussing "Some Facts and Views on Reclaimed Rubber," Dr. Palmer cited the increasingly important role played by reclaimed rubber in the rubber manufacturing field. He said that today manufacturers are using about one pound of reclaim to every four pounds of natural and synthetic rubber.

"Based on compounding value alone," the speaker said, "reclaim has a dollar value of 50 percent of natural and synthetic and in addition is a highly uniform product that provides ease of processing and more rapid cures for rubber compounding."

Denny Myers, head coach of the Boston College football team, was another speaker at the meeting. He showed moving pictures of the Boston College-Clemson game and his audience was introduced to some of the finer points of football.

Opens Philadelphia Office

Opening of a new branch office for sales of latex, Lotols and similar liquid rubber products at Fifth and Locust Streets, Philadelphia, Penna., has been announced by the Naugatuck Chemical Division of the United States Rubber Co. Gerald L. Dennis, formerly New York area representative, will be in charge. He will reside at 558 Pedley Road, Philadelphia. Mr. Dennis was graduated from Nebraska State Teachers College and obtained a Master of Arts degree at Colorado State Teachers College. He was chemistry instructor and athletic coach in Nebraska high schools until 1941, when he became senior supervisor at the Kankakee Ordnance Works, operated first by E. I. DuPont de Nemours & Company and later by U. S. Rubber. After the war, he was transferred to the Lotol laboratory in Naugatuck and in 1946 was made New York area sales representative.

Forms Plastics Division

The Nash-Kelvinator Corporation, Detroit, Mich, has announced the formation of a plastics division. The new division is located in one of the company's plants in Milwaukee and is in charge of W. F. Poupard. At the same time the company reported the discovery of a new surface treatment for polystyrene which will greatly increase the field of use of styrene resins. Called the "Logoquant" treatment, it depends on actual fusion between the polystyrene and resistant materials, and is not a mere surface treatment.

Edsall Named Production Manager

Dwaine Edsall

Promotion of Dwaine Edsall to production manager of the Akron plant of the General Tire & Rubber Co. has been announced by Harold J. Harmon, factory superintendent. General foreman of tubes and accessories prior to his advancement, Mr. Edsall has been with General 25 years. He jointed the company immediately after graduation from Central High School (Akron), and has had over-all experience from his work in various departments. During his 25 years, Mr. Edsall has worked in production, as supervisor in the tread room and mill room, as general foreman in the calender division, and as general foreman of beads, final inspection, repair, and airbags.

Braun Named Sales Director

Ernest J. Braun, associated with the DuPont organization since 1926, and long affiliated with the sale of the company's coated fabrics and materials, has been appointed director of sales of the Fabrics Division of the Fabrics and Finishes Department. The Fabrics Division with headquarters in New York City, handles the production and distribution of products of the DuPont plants at Newburgh, N. Y., and Fairfield, Conn. Mr. Braun's promotion completes a series of changes in the Fabrics Division management following the recent death of M. J. Callahan, who had been manager from 1941 to 1947. J. R. Buckley, former assistant manager, was promoted to manager; Max N. Nickowitz, formerly director of sales, is now assistant manager; and Mr. Braun is director of sales.

U. S. Rubber has announced that Christmas packages of golf balls will be ready for distribution in December for the first time since 1941. The cellophane-wrapped balls will be packed in colorful boxes holding one dozen balls each.

MOLD CLEANING METHODS DISCUSSED BY CHICAGO GROUP

A symposium on mold cleaning methods was featured at the Fall meeting of the Chicago Rubber Group on October 3, 1947. The meeting was held at the Morrison Hotel in Chicago, Illinois.

Under the direction of Chairman W. N. Crumpler (Mepham Corp.) the meeting began with a discussion of the wartime development for cleaning molds with soft grit (nut shell aggregates). These materials are actually hard, dense, tough particles which leave a clean unetched surface of high luster. This process was described by J. W. Ayres of C. K. Williams and Co.

V. L. Nichols, of the Vacu-Blast Mfg. Co., described the method of cleaning surfaces with grit particles riding in a cushion of water. This versatile "liquid honing" process utilizes either soft or hard grit particles. The non-corrosive water cushion facilitates cleaning with no appreciable dimensional change in the mold or surface.

The cleaning of molds by chemical means was outlined by T. H. Christopher, secretary of Kelite Products, Inc. In this process the mold or surface is immersed or brushed with a non-corrosive, non-inflammable emulsion type cleaner.

As a special feature, Floyd J. Lee, of the Seco Manufacturing Co., spoke on "Various Methods of Fire Prevention and Control as Recently Developed."

Philadelphia Holds Outing

Approximately one hundred and twenty-five members and guests attended the outing held by the Philadelphia Rubber Group on Friday, September 12, at the Oak Terrace Country Club, Ambler, Pa. Group members participated in golf and swimming contests, and competed in quoits, badminton and softball tournaments. The outing committee chairman was D. E. Henderson (Associated Rubber Products). The golf contest was arranged by Russell Shaw (Lee Rubber), while W. B. Dunlap (Lee Rubber) and W. B. Monroe (Linear Rubber) served on the prize committee. T. J. Glennon (H. M. Royal) handled the quoits, softball and other events. Some of the hundred and fifteen prizes awarded during the course of the day included different types of merchandise and sporting equipment.

Set Southern Ohio Party

The Southern Ohio Rubber Group will hold its first Christmas Party at the Miami Valley Country Club in Dayton, Ohio, on December 18. A dinner and dance is planned, and all members and guests are invited to bring their wives and lady friends. Appropriate gifts will be provided for each lady. R. B. Sucher, of the Inland Manufacturing Division of the General Motors Corp., Dayton, is chairman of the Christmas Meeting Committee.

TECHNICAL REPORTS AVAILABLE FROM THE DEPARTMENT OF COMMERCE

Data on additional reports on industrial and technical developments which occurred throughout the world during the wartime period as listed below. This information is taken from the "Bibliography of Scientific and Industrial Reports," issued by the U. S. Department of Commerce, and copies of the reports listed may be secured, at the prices indicated, from the Office of Technical Services, Department of Commerce, Washington 25, D. C. Remittances made payable to the Treasurer of the United States must accompany order. Titles of the more recent reports follow:

Recommendations for the Mixing of Perduren L. In German. Advertising pamphlet by I. G. Farbenindustrie which describes the product as a valuable material for the production of oil and gasoline resistant synthetic rubber goods. Enlargement print of part of Microfilm 185-2.—Report No. PB 19330. 9 pp. Photostat, $1; Microfilm, 50c.

Polymerization Method. In German. Draft of an I. G. Farbenindustrie patent application for producing synthetic rubber by polymerizing diene hydrocarbons alone or in a mixture with other polymerizable compounds by means of oxygen yielding polymerization catalysts in aqueous emulsion. Enlargement print of part of Microfilm 185-1.—Report No. PB 17618. 8 pp. Photostat, $1; Microfilm, 50c.

Regeneration of Reclaimed Rubber. In German. Brief recapitulation of various methods used by I. G. Farbenindustrie for the regeneration of reclaimed rubber, including the alkali process, high pressure steam process, retort process, acid process, and plasticization process. Enlargement print of part of Microfilm 185-2.—Report No. PB 19328. 4 pp. Photostat, $1; Microfilm, 50c.

Process for the Cementing of Synthetic Rubbers. In German. Main document is an intended patent application by I. G. Farbenindustrie for a process for cementing mixed polymers from butadiene carbohydrates and vinyl methyl ketone and additional polymerizable materials. Enlargement print of part of Microfilm 182-5.—Report No. PB 16348. 8 pp. Photostat, $1; Microfilm, 50c.

Method of Accelerating the Polymerization of Synthetic Rubber. In German. Draft of an I. G. Farbenindustrie patent application referring to the polymerization of butadiene hydrocarbons mixed with other polymerizable materials. Enlargement print of part of Microfilm 185-1.—Report No. PB 17615. 3 pp. Photostat, $1; Microfilm, 50c.

Process for the Production of Plastic, Easily Workable Synthetic Rubber. Intended patent application by I. G. Farbenindustrie. Enlargement print of part of Microfilm 182-5.—Report No. PB 16347. 14 pp. Photostat, $1; Microfilm, 50c.

Method for Production of Artificial Rubber. In German. Intended patent application by I. G. Farbenindustrie for producing artificial rubber by the polymerization of mixtures of isoprene with a vinylethynyl alkyl carbinol and acrylonitrile or methacrylonitrile in aqueous emulsion. Enlargement print of part of Microfilm 182-5.—Report No. PB 16341. 4 pp. Photostat, $1; Microfilm, 50c.

Method for Production of Rubber-Like Compositions. In German. Rough draft of patent application by I. G. Farbenindustrie for producing dichlorobutylene by converting methane successively into acetylene, acetaldehyde, butylene glycol, and butadiene. Enlargement print of part of Microfilm 182-6.—Report No. PB 16386. 3 pp. Photostat, $1; Microfilm, 50c.

Process for the Manufacture of Mixed Polymers. Patent application by I. G. Farbenindustrie for the manufacture of rubber-like polymerization products, polymerized by mixtures of vinylethinylcarbinols and butadiene hydrocarbons or substitution products of the latter. Enlargement print of part of Microfilm 182-6.—Report No. PB 16380. 25 pp. Photostat, $2; Microfilm, 50c.

Method for the Manufacture of Mixtures Consisting of Vulcanizable Artificial Materials. In German. Intended patent application by I. G. Farbenindustrie for so-called butadiene resins which can be used as additions to mixtures of synthetic rubbers. Enlargement print of part of Microfilm 185-2.—Report No. PB 16318. 15 pp. Photostat, $1; Microfilm, 50c.

Plasticizer or Filler for Rubber or Artificial Material. In German. Correspondence both prior and subsequent to issuance of patent to I. G. Farbenindustrie for the application of high molecular, undecomposed, distillable fractions of hydrogenation products, or of their residues, as filler or plasticizer for natural or synthetic rubber. Enlargement print of part of Microfilm 182-5.—Report No. PB 16349. 11 pp. Photostat, $1; Microfilm, 50c.

Laboratory Procedure for the Distinction of Natural Rubber and Its Substitutes. By P. Kluckow. In German. Enlargement print of part of Microfilm 182-5.—Report No. PB 16333. 7 pp. Photostat, $1; Microfilm, 50c.

Oppanol (Polyisobutylene) Manufacture at the Oppau Farben Works. By J. W. Livingston. Report on an investigation of the production and control of Oppanol B, which was used by the Germans as a natural rubber substitute for manufacturing cable, impregnating fabrics, for adhesives, and for waterproofing. Report No. PB 17564. 8 pp. Photostat, $1; Microfilm, 50c.

Procedure for the Production of Polymerization Products. Contains correspondence and related material concerning the production of rubber-like polymerization products characterized by the polymerization of butadiene or its substituted products in the presence of isobutyl polymers. Enlargement print of part of Microfilm 182-5.—Report No. PB 16379. 29 pp. Photostat, $2; Microfilm, 50c.

Process for the Manufacture of Molded Bodies. In German. Information comprises an intended patent application by I. G. Farbenindustrie for a process by which brittle to powdery emulsion polymers of butadiene hydrocarbons are finely ground and with addition of fillers vulcanized under pressure in closed molds or upon rolls without previous plasticizing. Enlargement print of part of Microfilm 182-5.—Report No. PB 16345. 6 pp. Photostat, $1; Microfilm, 50c.

German Neoprene. By N. A. Copeland and M. A. Youker. Typewritten report on production at Hoechst of monovinyl-acetylene (MVA), its chlorination to form 2-chloro-13-butadiene (chloroprene) and the polymerization of CD to form neoprene.—Report No. PB 19857. 30 pp. Photostat, $2; Microfilm, 50c.

Italian Protective Rubber Gloves. By Leslie L. Larson and P. W. Sanders. Description of physical and functional characteristics of two types of latex dipped rubber gloves having a high resistance to liquid mustard.—Report No. PB 4556. 6 pp. Photostat, $1; Microfilm, 50c.

Examination of Enemy Material (OD-113; AC-77): Examination of Japanese Aircraft Tires and Tubes. Issued by V. L. Smithers Laboratories.—Report No. PB 22368. 14 pp. Photostat, $1; Microfilm, 50c.

Examination of Enemy Material (OD-113), (AC-77), (N-119): Metallurgical Examination of Tire and Tube from Japanese Plane "Frances." Progress Report 166, May 24, 1945. Issued by V. L. Smithers Laboratories and Columbian Carbon Co.—Report No. PB 22000. 13 pp. Photostat, $1; Microfilm, 50c.

Development of Army Type Respirator. By Richard B. Knight. Procedures and test results on dust respirator E1R4 are reported.—Report No. PB 22281. 28 pp. Photostat, $2; Microfilm, 50c.

Cement; Synthetic and Reclaim Rubber. Specifications and uses given by U. S. Navy Department on three types of cement: reclaim, neoprene, and nitrile types.—Report No. PB 24894. 16 pp. Photostat, $2; Microfilm, 50c.

Polyisobutylene Compounds. Document concerned with priority of French patent application 38084, dated November 21, 1938. Discusses properties and advantages of polyisobutylene-carbon black-graphite mixtures and presents test results.—Report No. PB 16352. 7 pp. Photostat, $1; Microfilm, 50c.

RUBBER CONSUMPTION TREND IS REVIEWED BY E. G. HOLT

American statisticians have revised their initial estimates, made last April, for consumption of rubber in the United States in 1947 and 1948, according to E. G. Holt, rubber advisor to the Department of Commerce. These statisticians now look for 1947 consumption of 1,045,000 long tons, as compared with the earlier estimate of 1,037,000 tons. For 1948, however, they visage 883,000 tons consumed as against the previous estimate of 892,000 tons.

Consumption of rubber in countries outside of the United States during 1946, according to the rubber expert, is closely estimated at 430,000 tons, including for Russia only imported natural rubber. For 1947, American statisticians estimate consumption in such countries at 580,000 tons. The 1947 estimate reached by the Rubber Study Group was 609,000 tons.

Discussing foreign countries and areas individually, Mr. Holt stated that scarcity of coal and subsequent scarcity of carbon black have retarded consumption of rubber this year in the United Kingdom. During the first quarter, total consumption was reported at 31,794 tons; during the second quarter 38,748 tons. Carbon black is expected to be easier to import from the United States during the last half of the year, as rubber tire consumption in America is lower. In England only priority buyers can get tires, which are still rationed. Every effort is being made to obtain foreign exchange through tire exports. Consequently, a large demand for replacement tires still continues, calling for higher rubber consumption there in 1948 than in 1947.

The recent discussions at Paris indicated that on the continent of Europe also, rubber consumption in 1948 is expected to be higher than in 1947. This increase, however, is being predicated upon ways and means for necessary financing, said Mr. Holt. Despite record high consumption of rubber in France thus far this year, a large part of the motor vehicles in France still lack tires and black market tire prices there are extremely high.

In Germany, the Schkopau plant in the Russian zone is said to be producing Buna rubber at the capacity rate of 3,500 tons monthly. During the first quarter, 1,000 tons monthly were shipped to the British and American zones for production of tires that were shipped back to the Russian zone. This arrangement has recently expired.

Mr. Holt's report states that the Huls plant in the British zone produced 1,086 tons of Buna in April, 936 in May and only 485 in June, a total of 2,507 tons, compared with 2,016 tons in the first quarter. The decline in May-June production resulted from lack of coal. Other chemical rubber plants are out of production.

Total rubber requirements of the British and American zones are roughly 3,000 tons monthly. During 1946 and early 1947, a ratio of 15% natural to 85% chemical rubber was used in tires, but a 50-50 proportion is expected henceforth, with consideration given to 75-25 in the British zone. The imports of natural rubber are from British sources against dollar payment.

Tire producing plants in the British and American zones of Germany have a combined capacity of 119,000 car and truck tires and 432,000 cycle tires monthly, Mr. Holt stated. Cycle tires are made with approximately 66% reclaim. Production of reclaim in the American zone alone is 482 tons monthly. During the first half of 1947, production of tires was only a fraction of capacity, although rising. The need for tires to facilitate transportation of food and fuel is such that the use of substantial dollar credits to import tires is being permitted by the occupation authorities.

Mr. Holt indicated that the tire shortage continues likewise in many other countries of Europe. In the Americas, however, and in leading African markets, the supply of tires except for unusual sizes has about caught up with the demand.

Saving to Motoring Public

The motoring public will save more than $86,000,000 on its national tire bill this year, due to lower prices brought on by sharpened competition, according to Herbert E. Smith, president of the U. S. Rubber Co. This huge saving involves some 28,000,000 passenger and truck tires and tubes which the industry expects to make for replacement purposes in the last seven months of this year. Mr. Smith pointed out that in 1927 the automobile owner got about 432 miles per tire dollar, by 1937 this figure was raised to 800 miles per dollar, while today he receives about 1600 miles for every dollar he spends for a tire.

Call Attention to Permits

The Office of Rubber Reserve, Reconstruction Finance Corporation, has requested all manufacturers still purchasing GR-S to adhere more closely to closing dates for GR-S permits. According to the General Sales and Distribution Circular, "requests should be mailed in sufficient time to reach Rubber Reserve not later than the twelfth day of the month preceding the month in which delivery is desired." Rubber Reserve is faced with substantial difficulties in projecting operations because of the smaller number of plants now operating in the GR-S program, and accordingly will appreciate manufacturers conforming to the section quoted above.

SYNTHETIC RUBBER IN JAPAN SUBJECT OF SPECIAL REPORT

Technical data on the manufacture of synthetic rubber by seven firms in Japan and Korea is contained in a military intelligence report released for public dissemination by the Supreme Commander for the Allied Powers in Japan and now on sale by the Office of Technical Services, Department of Commerce. The report "should give a cross sectional idea of the volume of production and the processes used in the synthetic rubber industries of Japan and Korea," according to the introductory statement.

The report deals with the following companies: Kanegafuchi Industrial Chemical Co., Ltd.; Mitsubishi Chemical Industries, Ltd.; Nippon Tire Co.; Nippon Carbide Industrial Co., Ltd.; Sumitomo Chemical Co., Ltd.; Mitsui Chemical Industries Co., Ltd.; and Nitchitsu Synthetic Rubber Manufacturing Co., Ltd.

Among the subjects covered are the manufacture of monomers, vinyl acetylene, butadiene, acrylonitrile, chloroprene, and their polymerization products. Flow sheets for these processes and for the manufacture of synthetic crepe are given. Tables containing data on materials, power, and fuel requirements are included. Several Japanese patents on synthetic rubber and intermediate products are listed.

Orders for the report (PB-50912; Synthetic rubber manufacture; photostat, $5; microfilm, $2; 62 pages) should be addressed to the Office of Technical Services, Department of Commerce, Washington 25, D. C., and should be accompanied by check or money order, payable to the Treasurer of the United States.

Midget Racing Car Tires

A complete new line of tires designed for midget racing automobiles has been announced by the Goodyear Tire & Rubber Co., Akron. Branded "Racer," the new tires have flat treads with one shoulder rounded and the other square and higher than the rounded shoulder. Four of the most popular sizes, with smooth treads, are currently in production. These are: 4.00-12; 4.50-12; 5.00-12, and 5.50-12, all in four-ply construction. All of the tires in the line are suitable for grooving in cases where drivers desire to have their own anti-skid pattern put in the tread.

A brochure containing a series of advertisements used by the company to explain its purposes, policies and practices in local newspapers has been made available by the Porter-Cable Machine Co., Syracuse, N. Y. It is the company's hope that other manufacturers in both small and large communities will adopt similar series to fit their own public relations programs.

ORR Now Making Refunds

The Office of Rubber Reserve, Reconstruction Finance Corporation, Washington 25, D. C., is currently making refunds in certain cases on recent purchases of natural rubber. The refunds, if any, pertain to accounting procedure established under the Voluntary Distribution Plan established last March.

Under this plan it was agreed that those rubber manufacturers subscribing to the plan would be billed on the basis of 23c a pound for standard grade natural rubber after June 21, 1947, providing they had purchased the amount to which they subscribed by that date, including the percentage contingency to which they agreed.

It was further agreed that subscribers who had not purchased the amount to which they agreed by June 21 would continue to be billed at the 25¾c a pound figure until they had purchased the agreed-upon amount or until July 15, 1947, whichever was earlier.

In some cases, rubber manufacturers over-purchased at the higher figure and ORR is now engaged in making refunds in such cases. For this purpose, subscribers to the plan have been asked to submit special data on special forms supplied by ORR.

Those rubber manufacturers which did not subscribe to the Voluntary Distribution Plan are, of course, not entitled to any refunds or price adjustments under the plan. ORR has pointed out, however, that it may be in a position to make certain refunds or price adjustments to non-subscribers anyhow, and accordingly has requested all such non-subscribers to submit special information, again on special forms it is supplying to the industry.

If any rubber manufacturer has not received the forms mentioned herein, it is suggested that he contact the Office of Rubber Reserve.

Goodrich Plans Farm Center

According to John L. Collyer, president, the B. F. Goodrich Co. is planning a farm research center at Brecksville, Ohio, the site of its new research laboratory. The center will be inaugurated some time this year and will emphasize "the cultivation of ideas and materials designed to keep constantly expanding the company's contributions to farming techniques."

Changes at Anaconda Wire

Several changes in the executive personnel of the Anaconda Wire & Cable Co. were recently announced. W. E. Sprackling, vice-president for the past several years, has been elected executive vice-president. Francis O. Case has been elected a vice-president, and Clyde E. Week a director. Harold V. Engh has resigned as executive vice-president and director.

Heads Goodrich Clarksville Plant

Allan O'Neal

Allan O'Neal, associated with the B. F. Goodrich Co. since 1929, has been named manager of the company's plant in Clarksville, Tenn., succeeding C. R. Spencer, resigned. The plant mainly manufactures rubber soles and heels. Mr. O'Neal, a native of Bainbridge, Georgia, and a graduate of Georgia Tech, worked in the company's general laboratories in Akron before his graduation, returning to the Akron laboratories in 1933. He was assigned to the research laboratories in 1934 and to technical service, processing division in 1935. After brief service in the industrial products division in Akron, he was transferred to the Clarksville plant as assistant technical manager in 1940, becoming technical manager two years later. In 1946 he attended special courses in Harvard Graduate School of Business Administration, going to the company's Oaks, Pennsylvania, plant later that year as general foreman of the processing division.

Loses Carbon Black Appeal

The United States Fourth Circuit Court of Appeals at Richmond, Va., on September 27 refused an appeal by Emile C. De Stubner for judgment against the United Carbon Co. for $2,250,000 royalties allegedly due him for patents and inventions used in making dustless carbon black and in pigment dispersion. Original decision in Mr. De Stubner's suit was handed down by the U. S. District Court for the Southern District of West Virginia at Charleston.

Dismiss Seiberling Portal Suit

The portal-to-portal pay suit for $1,482,000 filed against the Seiberling Rubber Co. last January in Akron Common Pleas Court was dismissed on October 10. It was explained that the portal suit was outlawed at the last session of Congress and that dropping the suit was a mere formality.

Goodyear Shifts Personnel

Important organizational appointments within the Chemical Products Production Division of the Goodyear Tire & Rubber Co. have been announced by Russell De Young, vice-president in charge of production. The division, covering the manufacturing of chemicals, films, plastics, synthetic rubbers, etc., was established in February of this year, and is headed up by H. I. Belknap, who reports to Mr. DeYoung. The manufacturing of Airfoam became a part of the division on October 1.

G. H. Barnes, manager of Airfoam development at Plant 3, will report to Mr. Belknap in a similar capacity with his duties extended to development work for the company's production units now being installed at the Special Products Division (formerly Plant C, GAC, and recently purchased from the government by Goodyear).

Charles H. Maxwell, Airfoam development, Plant 3, has been named Airfoam production superintendent at Plant 3 and J. T. Richardson, division foreman on Airfoam, has been named Airfoam production superintendent at the Special Products plant. Mr. Maxwell will report to Mr. Belknap and Mr. Richardson will report to H. R. Child, recently named plant manager at the Special Products plant.

At the same time, F. J. Carter, director of personnel, announced that David H. Doner, Plant 2 Efficiency, has been transferred to the Special Products Division as personnel manager, reporting to Mr. Child.

Commodity Specifications Supplement

A supplement to the National Directory of Commodity Specifications has been made available by the National Bureau of Standards. The 1945 edition of the directory with the supplement provides a complete listing by name, designating number, and issuing or sponsoring organization of all the standards, specifications, and methods of test in general use for commodities produced in or purchased by the United States. Each specification, of which there are 44,000, is briefly summarized as to technical characteristics, scope and special applications. Copies of the directory and the supplement may be obtained for $4.00 and $2.25, respectively, from the Superintendent of Documents, Government Printing Office, Washington 25, D. C.

Named Industrial Sales Manager

William N. McKee, associated with the Shell Oil Co. since 1936, except for the war years when he served as an infantry officer, has been named industrial sales manager of the W. A. Cleary Corp., 254 West 31st St., New York, N. Y. The appointment was part of a program now being carried out by the Cleary organization to expand their lecithin sales from the food industries to the general process industries, particularly the rubber, paint and textile fields.

De Jong Joins Wenczel Co.

Jack De Jong

Jack de Jong, formerly vice-president of the Lastikoid Corporation and before that of Latexture Products, Inc., both of New York City, has joined the Wenczel Company in Trenton, N. J., in charge of forms and molds made by that company for use in latex dipping. The company has enlarged its plant at Clagg and Enterprise Avenues in Trenton and is currently in production on made-to-order porcelain and hard rubber forms for dipping.

Molded Neoprene Shoulder Pads

A new type of molded shoulder pad that maintains its original shape, the filling being of wool fibers impregnated with neoprene, is being manufactured by the Sponge Rubber Products Co., Derby, Conn. Wool fibers are "fluffed," then treated with neoprene latex to form a permanent resilient bond. This resilience, combined with the natural springiness of the wool, makes possible a shoulder pad that molds to body contours and insures a smooth and lasting fit. The pads are being made exclusively for the Perma-Fit Shoulder Pad Co. of New York City.

Bulletin No. 253, describing and illustrating two Sonntag Universal Impact Machines of the pendulum type for making tension tests on plastics and metals, has been made available by the Testing Equipment Department, Baldwin Locomotive Works, Philadelphia 42, Penna.

Lifewall, a new vinyl resin plastic wall covering, has been introduced by the Pantasote Co., Passaic, N. J. Because of its flexibility, it is said to conform to all wall contours, including any angle inside or outside corner, without the use of metal molding or expensive preparatory work.

Rubber Glove Sizes

Are American hands growing smaller? That is a question being asked by the rubber glove division of the B. F. Goodrich Company now in full production on surgical and household gloves. Before the war, according to William E. Powell of the company's sundries department, the most popular size glove was e'gnt but today it is seven and a half. "We don't know the reason," Mr. Powell declared. "We only know that the smaller size is in the greatest demand and has been since we resumed civilian production."

Korfund Rubber-Spring Mounting

The Korfund Type RS Conical Rubber-Spring Mounting, a new low-cost vibration control unit, has been introduced by the Korfund Co., Inc., 48-13 Thirty-Second Place, Long Island City 1, N. Y. The new mounting has a high load capacity, ranging from 25 to 125 lbs. per unit. The conical spring design provides greater horizontal stability than conventional all-rubber mountings. This means smoother operation, particularly during starting, and frequently eliminates the necessity for snubbers or flexible connections. This combined use of rubber and

steel springs not only increases the load capacity but also gives the Type RS a wide frequency range for successful isolation. It is equally effective for pumps operating at 1750 rpm, as well as compressors running at 450 rpm. The new Korfund Type RS has been designed primarily for use on compressor units, generator sets, motor generators, pumps, motors, fans and other machinery requiring a highly efficient, economical, standardized vibration isolator.

"Tim" Gross with Muehlstein

T. M. "Tim" Gross

T. M. "Tim" Gross, associated with the Loewenthal Company for some twenty-five years, handling dealer operations and as manager of that company's East St. Louis office, has joined the staff of the Akron office of H. Muehlstein & Co., Inc. He is well known in the Akron area and brings a wealth of experience on scrap rubber to his new post.

Hose for Handling Gases

A new rubber hose with increased strength and lighter weight has been developed by the United States Rubber Company for handling propane and butane petroleum gas. The hose is made of a special synthetic rubber compound capable of resisting the effects of liquefied petroleum gas. It is reinforced with Ustex yarn, a chemically-treated cotton textile having high strength and low stretch characteristics. The hose will be molded in continuous lengths in three sizes—one-half inch, three-quarter inch and one inch inside diameter. It will be branded every five feet with the name U. S. Giant L. P. G. hose. It is intended for use primarily in transferring the liquefied petroleum gas to homes, factories and other points from supply truck to storage tank.

Denman Tire & Rubber Co.

First Half: Net income of $115,857, which is equal to 52c each on 197,075 shares of common stock, and which compares with $163,975, or 83c a share, in the corresponding period of the previous year. Net sales in the 1947 period amounted to $1,901,684, as against $1,-973,989 in the 1946 period.

Faultless Rubber Co.

First Half: Net profit of $458,411, which is equal to $3.50 a share, and which compares with $281,199, or $2.15 a share in the 1946 period.

NEW POLYMERS AUTHORIZED BY OFFICE OF RUBBER RESERVE, RECONSTRUCTION FINANCE CORPORATION

Listed below are types and properties of new experimental GR-S polymers (including GR-S latices) which have been authorized by the Office of Rubber Reserve, Reconstruction Finance Corporation, since publication of those in our previous issue. Procedures for the distribution and sale of these polymers will be found in our October, 1945, issue. Normally, experimental polymers are produced only at the request of the consumers with 20 bales of the original run set aside for distribution to other interested companies for their evaluation. Such rubber is available in quantities of one or two bales upon request to the Sales Division of Rubber Reserve within six months after the experimental polymer was produced. Subsequent production runs are made if sufficient requests are received to warrant it.

X Number	*Manufacturing Plant*	*Date of Authorization*	*Polymer Description*	*Special Characteristics*
X-407 GR-S	Goodyear, Torrance	8/21/47	Batchwise GR-S-10AC a slightly lower conversion (alum coagulation and rosin soap emulsification).	Similar to GR-S-10AC.
X-408 GR-S	Goodrich, Port Neches	10/3/47	Same as GR-S-18 except that it will be stabilized with antioxidant 190 X-3 (an experimental variation of Stalite).	GR-S-18 is GR-S-10 which has stabilized with Stalite instead of BLE or PBNA. X-408 should be relatively non-staining.
X-409 GR-S Latex	U. S. Rubber, Naugatuck	9/25/47	Type IV GR-S Latex at a higher solid content. Has a monomer charge ratio of 50 butadiene and 50 styrene with mixed rosin soap emulsification.	Specification Limits: Total solids, 45.0% min. and 50.0% max.; Residual styrene, 0.10% max. on total latex; pH, 10.5 min., 12.0 max.; Mooney viscosity range, 80 to 100.
X-410 GR-S	Firestone, Akron	10/3/47	69.7 butadiene-30.3 styrene monomer charge ratio, with oleic acid, soap, emulsification at high conversion. Stabilized with 3.65 parts PBNA. Also contains 0.15 parts candelilla wax and 0.45 parts white oil. Alum coagulated. No Mooney specified since modifier will be held constant.	One half cent premium over standard GR-S to cover cost of additional chemicals.

Odessa Black Plant Sold

The channel carbon black plant at Odessa, Texas, which was operated during the war by the United Carbon Co., has been sold by the War Assets Administration for $4,300,000 to Sid W. Richardson, an independent oil and gas operator of Fort Worth, Texas. The plant, one of the largest built by the Government to meet military needs, consists of 670 buildings on 426 acres. It has a capacity of 45,000,000 pounds of carbon black annually. The property includes 416 burner buildings with sheet-iron coverings, ten warehouses, miscellaneous smaller buildings of steel frame, burners, scrapers, conveyors, pulverizers, machine shop equipment and loading and bagging machinery. Rail service is provided by the Texas and Pacific Railroad.

Offer Another Black Plant

The three-burner unit channel black plant in Seagraves, Texas, now operated under interim lease by the Columbian Carbon Co., has been offered for sale or lease by the War Assets Administration. Designed to produce approximately 13,000,000 pounds of channel black a year, the property covers about 235 acres and includes 180 burner buildings, three refining buildings, a five-room house, and 18 four-room frame dwellings. Bids will be received up until November 5 by the WAA regional office located in the North American Aviation Plant, Grand Prairie, Texas.

Additional Navy Specifications

Three additional specifications on rubber have been issued by the Bureau of Ships of the Navy Department since our last report. Copies of these specifications may be secured by addressing a request to the Navy Department, Bureau of Supplies and Accounts, Washington 25, D. C. The new specifications follow:

Navy Dept. Spec. 27D11—Deck Covering, Lightweight, Non-Slip, Abrasive-Coated Fabric and Cement (Sept. 1, 1947).

Navy Dept. Spec. 52P60a—Protective Coating Material, Polymer Powder, Product of an Organic Dihalide and an Inorganic Polysulfide (Sept. 1, 1947).

Federal Spec. HH-T-111c—Rubber Insulating Tape, Natural and Synthetic (May 22, 1947).

Yarn Plant Nearing Completion

Two buildings of the $25,000,000 rayon plant at Morristown, Tenn., being constructed for the American Enka Corporation by the H. K. Ferguson Co. have been completed and steel erection has started on three others, it was disclosed on October 8. The entire plant, largest postwar industrial development in Tennessee, is expected to be completed after the first of the year. When it goes into production, it will provide employment for 1,000 to 1,500 persons. The factory has facilities for producing 20,000,000 pounds of rayon tire yarn annually, with provisions for an additional 2,000,000 pounds of rayon textile yarn.

Goodyear Engraving Gum

A new type engraving gum, featuring a red strip ply to facilitate uniform stripping of non-printing areas, has been announced by the Mechanical Goods Division of the Goodyear Tire & Rubber Co., Akron, Ohio. Designed especially for the box, bag and paper products printing industry, the new gum is of standard three-ply construction with an additional inner strip of acid and oil resistant rubber. This special insert, made of rubberized fabric, permits the hand engraver to strip cleanly without peeling, regardless of cutting depth. Available in two styles, blue-gray or black face with either friction or buffed rubber backing, the red strip gum is being produced in 40-inch widths, five yards long, in one-quarter inch and five-sixteenth inch gauges. Durometer hardness ranges from 25 to 75.

Sales Agent For Mexico

The B. F. Goodrich Chemical Company of Cleveland, Ohio, has announced that Ernesto Del Valle of Mexico City has been retained as exclusive sales agent in the Republic of Mexico for all of the company's products. The new sales agent will handle the sale in Mexico of Geon polyvinyl resins and plastics, Hycar rubber, Kriston thermosetting resins, and the company's entire line of Goodrite rubber and organic chemicals. Del Valle also will be available for consultation and technical service on all Goodrich Chemical products.

sterling L-HMF S-SRF

CARBON BLACK *for Bulk Handling*

Cabot's furnace type carbon blacks, Sterling S (semi-reinforcing furnace black) and Sterling L (high modulus furnace black) travel easily through bulk handling equipment. Plant deliveries over a long period have demonstrated that in bucket elevators, belt conveyors and air activated systems, the pellets have strong resistance to breakdown. Sterling S and Sterling L are delivered from Cabot plant to Banbury without manual handling, without loss due to dust.

CABOT

GODFREY L. CABOT, INC. 77 FRANKLIN ST., BOSTON 10, MASS.

LOS ANGELES NEWS

Six hundred and forty acres of land near Lancaster, Calif., formerly held by the War Assets Administration, have been purchased by the United States Rubber Co. to be used as their national tire-testing headquarters.

The announcement was made in Los Angeles by Richard Beresford, test supervisor, who stated that preliminary plans call for the erection of repair shop buildings, a warehouse and staff headquarters. Facilities for wear and skid testing of tires will also be built on the site seven miles north of Lancaster. Tire testing operations, which heretofore have been scattered throughout the United States, will be concentrated in this area.

Mr. Beresford said the reason for the move was the great varieties of weather and contrasting differences in terrain found there which makes the area ideal for the purpose. Any climatic condition to be found in the United States, from desert heat to seacoast humidity, could be found in the Lancaster area.

The new headquarters were used for training British flyers during the war.

The United States Rubber Company has signed an agreement permitting the Richfield Oil Corporation to drill for oil at the site of its tire factory in Los Angeles. Herbert E. Smith, president of the rubber company, announced that drilling will start shortly.

The grant is effective for twenty years and provides for a payment of royalties to the rubber company on all oil and natural gas produced.

Rights were granted to all oil reserves below the surface of the 35 acres at 5675 Anaheim-Telegraph Road, where the tire plant is located. Since the slant drilling method will be employed however, the tire plant will not be disturbed.

A super deluxe golf tournament was planned by the Los Angeles Rubber Group, according to Tway Andrews (H. M. Royal), golf chairman, to be held at the Riviera Country Club on Friday, October 17. Attendance was limited to eight foursomes. A report on the tournament will appear in the next issue.

Several personnel changes have occurred in the Los Angeles area in recent weeks. Among them were the following: Hal Snyder, formerly with the Seiberling Rubber Co. of Canada, has joined the California Rubber Products Co.; Al Smith, formerly with Goodrich, is now plant engineer for the Kirkhill Rubber Co.; Jack Garwood, formerly with Goodrich, has joined the executive staff of the Pacific Hard Rubber Co.

Harry Franklin, associated with the Kirkhill Rubber Co. for the past few years, recently left that organization and has formed the Franklin Rubber Co. at Inglewood, California.

Several local rubber men are planning to attend the rubber conference which will be part of the Pacific Chemical Exposition to be held in San Francisco later this month. Curtis Wolter, chairman of the Los Angeles Rubber Group, which is participating in the conference, will act as chairman at one of the rubber sessions.

The Los Angeles Rubber Group is planning another gay Christmas Party this year, and the chances are that it will call for a dinner-dance, with dress optional. The matter was scheduled for discussion at the meeting of the group held earlier this month.

A "shopping list" of 51 war surplus industrial plants available in mid-western Zone 3 has been prepared by the War Assets Administration. All of the plants listed are adaptable to general manufacturing purposes. Copies of the list may be secured from the WAA, 327 So. LaSalle St., Chicago, Ill.

EXPORTS OF RUBBER PRODUCTS CONTINUE TO SHOW DECLINE

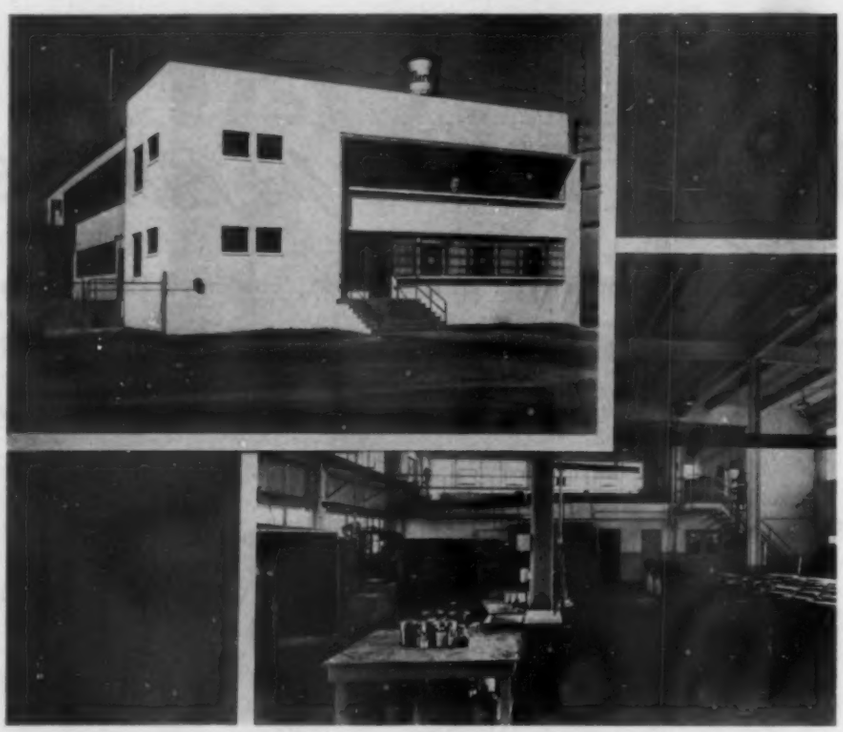
Exports of rubber manufactures dropped for the third successive month in August from the all-time peak set during the second quarter of the year, the Department of Commerce indicated on September 30.

August exports of rubber and rubber products were valued at $15,861,000, a drop of 5 per cent from the July figure of $16,705,000. The August total for rubber products alone was $15,241,000, compared with $15,903,000 in July.

The most pronounced decline in exports occurred in tires and camelback, which dropped 8 per cent from $11,303,000 in July to $10,421,000 in August. Rubber footwear and other principal products likewise declined, but were partially offset by increased exports of rubber sundries and specialties, such as rubberized piece goods and other light goods.

Hewitt Sales Increasing

Barring a drastic change in the business situation, sales of Hewitt-Robins, Inc., Buffalo, N. Y., according to Thomas Robins, Jr., president, should top $20,000,000 this year. This volume would compare with $15,426,415 in 1946 and would be about four times greater than the combined annual sales of the predecessor companies, Hewitt Rubber Corp. and Robins Conveyors, Inc., in the years before the war. The companies were consolidated in June, 1945.



Exterior and interior views of the new Pacific Coast plant of American Anode, Inc., at Los Angeles. The plant handles latex mixtures and compounds of many types, in both natural and synthetic rubbers, as well as synthetic resins.

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CANADIAN NEWS

No increase in the natural rubber content of their products is expected by Canadian rubber manufacturers in the near future, a company official stated recently.

Commenting on the Washington announcement that United States manufacturers would no longer be required to use synthetic rubber in approximately 30,000 items, he said the change places the American rubber industry on the same footing as it has been in Canada for the last year, leaving it up to manufacturers to determine allocation of their crude and synthetic supplies.

Canadian manufacturers, by voluntary agreement, use a proportion of synthetic rubber in their products, although regulations requiring its use were revoked by Reconstruction Minister Howe last fall. The official said a balance between natural and synthetic rubber would be reached as more supplies became available.

A flat increase of 20 cents an hour for employees of Quebec's four leading rubber footwear plants will be asked by four Trades and Labor Congress of Canada unions, it was disclosed last month following a labor conference held in camera in Montreal.

The companies affected are the Dominion Rubber Company of Canada, Ltd., Cambridge Rubber, Ltd., Miner Rubber Co., Ltd., and the British Rubber Company of Canada, Ltd. Several thousand employees reportedly are involved.

Delegates representing the four unions endorsed a draft agreement which calls for a reduction in the work week from 50 to 45 hours and a corresponding increase in hourly rates to compensate for the reduction in hours, a flat 20-cent-an-hour boost, six paid statutory holidays, three weeks vacation with pay after 20 years, and adoption of the Rand Formula on union security.

Tire price reductions ranging from 7½ to 15% were announced over the September 15 week-end by both the Goodyear Tire & Rubber Co. of Canada and the Firestone Tire & Rubber Co. of Canada. The Firestone decrease on passenger and truck tires and tubes varied from 7½ to 15% while the Goodyear reductions amounted to more than 14% in some cases, bringing prices of most sizes of passenger tires below those prevailing for similar tires before the war. An indication of forthcoming price reductions was given to members of the Purchasing Agents' Association of Toronto in September by J. McCartney, of Gutta Percha & Rubber, Ltd., who delivered a report reviewing the rubber and cotton markets.

The Joseph Stokes Rubber Co., Ltd., Welland, Ontario, announced on October 3 that a contract has been placed with the Robertson Construction & Engineering Co., Ltd., of Niagara Falls, Ontario, for the construction of another addition to the Stokes plant. The new addition will contain approximately 15,000 square feet of floor space and will consist of a modern steel brick building, measuring 235 feet long by 60 feet wide. Estimated cost of the new addition is about $150,000.

Two new appointments were recently announced by the Dominion Rubber Co., Ltd. Harold F. Meech, associated with the Footwear Division in various capacities since 1935, has been appointed assistant to the manager of footwear sales, with headquarters in Montreal, while Wilson A. Martin, a member of the industrial engineering staff of the tire factory at Kitchener, has been named manager of industrial relations and industrial engineering at the Textile Division plant at Kitchener.

A cut in the production of synthetic rubber at Sarnia was scheduled to take effect early in September, according to E. R. Rowzee, manager of the Polymer Corp. The Sarnia units have been operating at a rate "substantially above their designed capacity in order to offset the critical shortage of tires and other rubber products." Simultaneously, C. H. Madsen, manager of the Canadian Synthetic Rubber Corp., operator of the synthetic rubber units at Sarnia, announced that approximately 50 employees would have to be laid off in keeping with the planned reduction in output.

Indicative of the widespread use of salvage in industry as a means to cutting costs and avoiding waste, stocks of reclaim rubber increased in July to 2,629 tons from 2,599 tons in June, the Dominion Bureau of Statistics reported recently.

Stocks of natural rubber decreased to 10,045 long tons from 10,108 in June and synthetic rubber stocks decreased to 3,733 long tons from the previous month's figure of 4,488.

Manufacturers used 2,433 long tons of natural rubber in July, compared with 2,627 tons in June. Synthetic rubber used amounted to 2,059 tons as against 2,540 in the previous month. Reclaim used came to 1,120 at the end of July, compared with the June figure of 1,299.

Domestic production of synthetic rubber totaled 3,480 long tons in July, compared with 3,392 in June, and reclaim 225 long tons, compared with 334.

Over-all sales of the Goodyear Tire and Rubber Company of Canada are running at a record level and for the year ending December 31, 1947, will be considerably above the volume for 1946.

With the capacity of the plants at New Toronto and Bowmanville, Ont., substantially increased during the war years, the high rate of operations is continuing and a satisfactory backlog of orders is being maintained. The demand for replacement tires is catching up while the demand for new tires depends pretty well on the number of motor vehicles manufactured. Tractor and heavy duty tire business is good. The export division, due solely to exchange difficulties, is moderately below last year's level.

The recent declaration of an extra dividend of $3 a share, payable October 1, 1947, indicates that a sum of at least $7 a share will be paid in 1947, a total only exceeded by one year in the company's history, 1938, when $7.50 a share was paid. Operations last year were seriously affected by a four months' strike of employees and net profits for the year 1946 were equal to $5.40 a share on the common stock.

Consolidated operating profits of the British Rubber Co. of Canada for the first quarter ended July 30, 1947, were $537,062 before depreciation of $24,470, bond interest of $6,102, and provision of taxes of $247,455.

Net earnings for the period under review were $259,045, which compares with $623,282 earned by the company in the 1946-47 accounting year ended April 30, 1947, which was less than a full 12-month period due to the varying balance sheet dates of certain subsidiaries.

On the basis of the presently outstanding 7,500 shares of 5% $100 par value preferred shares which were publicly distributed early this summer, net earnings for the 1947-48 first quarter were equivalent to $34.54 per share.

Monsanto (Canada) Ltd., intends to double its present plastics production capacity within two years. There will be a substantial and general production increase in the company's Montreal plant and a building program to achieve at least 100 percent greater capacity is under way, the organization's president, Lee E. Ryan, is reported to have stated. Included in the program is increased production of laminating resins which are manufactured at Montreal together with polystyrene.

Plymouth Sales Setting Record

Sales and shipments of the Plymouth Rubber Co. are reported currently at the highest level in the company's history and total volume for the year to end November 30, 1947, may exceed that of last year. Sales would have been well in excess of the record of $12,678,315 set a year ago were it not for a month's work stoppage last summer. The company's plants at Canton and Rockland, Mass., are reported operating at capacity, with more than 1,000 employed. More workers are said to be needed to handle the present backlog of orders.

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Function of the seal is to keep out moisture, dirt, oil and dust. The effectiveness of the seal in performing this function determines the reliability of operation of the switch. That's why "Micro" engineers, working with the rubber technologists of Acushnet Process Company, selected Perbunan as the logical material for this sealing application.

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OBITUARIES

Dr. Walter P. Bradley

Dr. Walter Parke Bradley, associated with the U. S. Rubber Co. from 1912 to 1919, and president of the Bradstone Rubber Co. from 1919 to 1938, died on September 14 at his summer home in Southampton, L. I., N. Y., at the age of 85, after an illness of several weeks.

Born in Lee, Mass., Dr. Bradley received an A.B. from Williams College in 1884, and then studied in Germany at the University of Cottingen for four years, earning A.M. and Ph.D. degrees. From 1893 to 1914 he served as Professor of Chemistry at Wesleyan University, and at his retirement in the latter year he was given an honorary degree of Doctor of Science. During his last two years with the university, he also worked with the U. S. Rubber Co. as director of that company's general laboratories.

Dr. Bradley is generally credited with the construction of the first liquid air machine in the United States for the use of universities. He is also believed to have been the director of the first American laboratory designed for research at extremely low temperatures. He contributed to numerous scientific journals on such subjects as permanent gases and critical temperatures.

A resident of Middletown, Conn., Dr. Bradley was a member of Phi Beta Kappa, Zeta Psi and Sigma Xi. A widow and daughter survive.

H. Stuart Hotchkiss

H. Stuart Hotchkiss, chairman of the boards of both the Cambridge Rubber Co. and the General Latex & Chemical Co., Cambridge, Mass., and former chairman of the board of the General Rubber Co. and its subsidiaries, died at his home in Boston, Mass., on September 16, after an illness of a few hours. He would have been 69 years old on October 1.

Born in New Haven, Conn., Mr. Hotchkiss was graduated from Yale in 1900 and one year later entered the rubber industry with L. Candee & Co., a subsidiary of the U. S. Rubber Co., of which he later became a vice-president. At one time he was also chairman of the board of U. S. Rubber Plantations, Inc., and spent much time in the development of rubber plantations in Sumatra and Malaya.

In 1932 Mr. Hotchkiss went to Europe as a representative of the trustee in bankruptcy of the International Match Corp., and during 1934-35 he served as industrial advisor to the Swedish liquidators of the Kreuger and Toll organization. In the first World War he served as a lieutenant colonel in the air force and later was senior assistant military attache at the American Embassy in London.

Frank Zerillo

Frank Zerillo, head of Zerillo Rubber Products, specialists in the bonding of rubber to metal, with headquarters at 300 Sheffield Avenue, Brooklyn, N. Y., died in a Brooklyn hospital on August 13 as a result of a heart attack. He was 60 years of age. A native New Yorker, Mr. Zerillo attended local schools and was a self-trained technician. Before developing his method of bonding rubber to metal he was associated with the steel industry, the road construction business, and the chemical manufacturing field. Since 1931, when he developed his process, he was actively associated with the rubber industry, and handled several naval contracts during the last war. Funeral services were held on August 16, with interment in Holy Cross Cemetery, Brooklyn. The family intends to continue the business. A widow, son and daughter survive.

James E. Auten

James E. Auten, of Stratford, Conn., former president of the Barber Asphalt Co., and associated with the rubber industry at various times, died in Bridgeport Hospital, Bridgeport, Conn., on October 1, at the age of 64. Born in Berlin Township, Knox County, Ohio, Mr. Auten first began his career with the B. F. Goodrich Co. in Akron in 1898. He later was associated with various companies in an engineering capacity, including the Bridgwater Machine Co. of Akron, and the Western Electric Co. in Chicago. From 1911 to 1914 he was engineer of construction for the Firestone Tire & Rubber Co. and aided in the design and construction of one of the company's plants. During World War II he served as director of the machine tools division of the War Production Board. A widow, three sons, and a daughter survive.

Vernon E. Royle

Vernon E. Royle, former president of John Royle & Sons, and grandson of the founder of that company, died at his home in Paterson, N. J., on September 19 at the age of 70. A member of the class of 1902 of Stevens Institute of Technology, Mr. Royle joined the machinery company, which specializes in the manufacture of extruders, shortly after his graduation. Active for many years in local charitable and other enterprises, he was also a member of the board of managers of the Paterson Savings Institution. His business activities included membership in the American Society of Mechanical Engineers. A widow survives.

Henry G. Tyer

Henry G. "Harry" Tyer, vice-president and former president of the Tyer Rubber Co., Andover, Mass., died suddenly on September 26 in northern Maine where he was vacationing. He was 62 years of age.

Born in Andover, Mr. Tyer was named after his grandfather, founder of the Tyer Rubber Co. He received his education at Phillips Academy, Andover, and Harvard University, graduating from the latter in 1907. Shortly after graduation he entered the employ of Tyer Rubber and was associated with the company throughout his lifetime. At the time of his death he was functioning as assistant sales manager of the company's sundries division.

A former hockey player at Harvard, Mr. Tyer's interest in sports was unflagging and he was co-inventor of the Art Ross-Tyer Official Hockey Puck, which is currently being used in the big leagues. He was also rated among the most astute amateur chess players in the country and was an enthusiastic fisherman. He was also closely associated with municipal activities in Andover, serving on numerous committees and societies.

A widow and two daughters survive.

Glenn H. Seely

Glenn H. Seely, formerly president of the Seely Instrument Co. at Akron, and a pioneer in the adaptation of pneumatic controls to rubber manufacturing processes, died in Glendale, Calif., on September 17. He was 59 years of age. Born in Columbus, Ohio, Mr. Seely first organized the Thermo Instrument Co. which was later absorbed by the Bristol Co., representing the first venture of that company into the pneumatic control field. After joining Bristol on a consulting basis for some time, Mr. Seely left that firm to return to Akron where he organized the Summit Industrial Instrument Co., predecessor of the Seely Instrument Co. In 1945 he disposed of his control over the Seely Instrument firm and retired to Glendale, Calif. Funeral services were held in Akron on September 23, with interment in Rose Hill Cemetery. A widow and stepson survive.

Enoch E. Paine

Enoch E. Paine, president and treasurer of the Paine & Williams Co., which he founded in 1922, and said to have developed the first rubber floor mat and running board for automobiles, died at his home in Cleveland Heights, Ohio, on September 10, as the result of a heart ailment. Born in Louisville, Kentucky, Mr. Paine came to the Cleveland area in 1916 as sales manager of the Ohio Rubber Co., Willoughby, where he developed the rubber floor mat and running board for automobiles. He left Ohio Rubber in 1922 to found the Paine & Williams Co., which currently distributes Seiberling Rubber Products.

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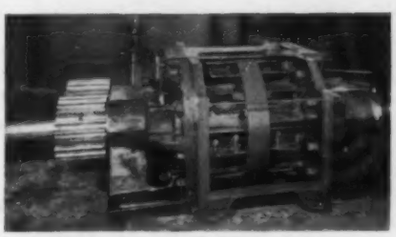

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DuPont NA-11 Accelerator

NA-11 (p,p' diamino diphenyl methane), a new material which is said to meet the demand for a vulcanization accelerator for neoprene compounds by combining safety in processing with strong activation at curing temperatures, has been introduced by the Rubber Chemicals Division, E. I. du Pont de Nemours & Co., Inc., Wilmington 98, Delaware. It is a light tan crystalline powder, with a specific gravity of 1.11, and a melting point of 84° to 86° C. It will keep indefinitely in closed containers at ordinary temperatures and is soluble in common organic solvents. According to DuPont, neoprene compounds with NA-11 can be vulcanized to a high state of cure without sacrificing efficiency in the utilization of curing equipment. This high state of cure results in optimum properties in the vulcanizate, such as low compression and permanent set, high resilience, maintenance of original characteristics upon aging, and resistance to stiffening at low temperatures.

U.S. Signs Labor Pact

Representatives of the U. S. Rubber Co. and the United Rubber, Cork, Linoleum & Plastic Workers of America (CIO) reached an agreement on September 25 whereby the company will pay straight time for six holidays when not worked. The agreement, which is retroactive to and including Labor Day, 1947, conforms to those recently signed by Goodyear and Goodrich. Approximately 34,000 wage employees in 16 U. S. Rubber plants are affected. Firestone is the only member of the "Big Four" which has not yet signed a similar agreement.

F. G. Sherbondy

F. G. Sherbondy, vice-president and treasurer of the Biggs Boiler Works Co., of Akron, died in People's Hospital, Akron, on September 11. He had been suffering from a lingering illness for over a year. Associated with the Biggs organization for some 45 years, Mr. Sherbondy, popularly known as "Fred," was credited with the development of several special pieces of rubber apparatus. He was widely known and liked for his keen humor and wit, and will be long remembered by his numerous business friends and associates.

Charles E. Arnold

Charles E. Arnold, retired research chemist, died on September 29 in Memorial Hospital, Wilmington, Delaware, after a two-week illness. He was 71 years of age. Mr. Arnold came to Wilmington in 1904 as a research chemist at the DuPont Experimental Station, and is credited with being one of the developers of the company's Fabrikoid material. He was also the author of a publication called "My Remembrances of the DuPont Experimental Station."

Rubber Tile Market

According to a survey recently completed by *The Hotel Monthly*, a $382,000,000 rehabilitation, repair and refurnishing program is being launched by the nation's larger hotels now that rigid Federal controls have ended. The total potential market for tiling of all kinds is estimated at $8,264,098, including public rooms, guest rooms, and food and beverage rooms. Of this amount, it is estimated that $2,472,152 will be spent for rubber and asphalt tile. In computing these figures, an average price of 60c per square foot for rubber tile and 30c per square foot for asphalt tile was used.

Forms Plastics Sales Division

The B. F. Goodrich Company has announced the establishment of a new division to be known as the Plastic Materials Sales Division and has named L. H. Chenoweth as general manager. The division will handle sales of all plastic materials which the company handles, including Koroseal. Mr. Chenowith, a graduate of Harvard, joined the organization in 1914 in the industrial products sales division. He held many executive posts in that field, including the managership of the Detroit district, merchandise manager and manager of manufacturer's sales. He has headed the company's plastic materials sales since 1943. Until now, this had been included in the industrial products division.

Goodrich Names Holland Personnel

Three Akron employees of the B. F. Goodrich Co. have been assigned to the Holland rubber plant with which the company has become associated. The new Holland company is known as N. V. Nederlandsch-Amerikaanasche Autobanderfabriek, and the plant is located in Enschede, a suburb of The Hague. R. J. Hull, production manager of several departments in the Akron tire plant, has been named factory manager; M. C. Pierce, manager of truck and bus tire development at Akron, will be technical representative in tire construction, and O. J. Dahl, a technician in the Akron tire division, will be technical representative in compounding.

Firestone Plant for Australia

According to press reports from Canberra, Australia, the Firestone Tire & Rubber Co. will soon begin the construction of a new tire plant at Finsbury, South Australia. The new plant, which is expected to be one of the largest in the Commonwealth, will cost approximately $3,250,000.

Hold Carbon Black Prices

Owen J. Brown, Jr., general sales manager of Godfrey L. Cabot, Inc., Boston, Mass., announced on September 16 that prevailing prices on ordinary rubber grades of channel black and furnace black will be maintained during the fourth quarter of the year. The announcement was similar to that made by Mr. Brown in June for the third quarter. The price of natural gas, from which carbon black is made, continues to rise and new gas contracts call for increases to become effective the first of the year. Until the effect of accumulated cost increases have been analyzed, Mr. Brown stated, the Cabot organization will take no position in respect to prices for 1948. Incidentally, the Texas Railroad Commission has indicated that carbon black manufacturers will have to pay 4¼ cents a thousand cubic feet if they use sweet "non-sulfurous" Texas natural gas.

Plan Materials Handling Exposition

It has been announced that the National Materials Handling Exposition will be conducted for the second year in the Public Auditorium at Cleveland, Ohio, from January 12 to 16, inclusive. One hundred and fifty-four exhibitors, 60% more than the number represented at the first show earlier this year, already have contracted for booth space. A Conference on Materials Handling will again be a feature of the exposition. Information concerning the show, the conference program, and hotel accommodations may be secured from Clapp & Poliak, Inc., 350 Fifth Ave., New York 1, N. Y.

Wire Plant for Pennsylvania

The Wire and Cable Division of the Electric Auto-Lite Co., which maintains headquarters at Port Huron, Michigan, has begun construction of a new plant at Hazelton, Penna. According to J. A. Minch, vice-president and general manager of the division, a complete rubber installation is contemplated for the plant.

Abbey Hirschfield

Abbey Hirschfield, sales manager of the shoe findings division of the Panther-Panco Rubber Co., died at the Phillips House in Boston, Mass., on September 9, after a brief illness. He was 46 years of age. Born in Montreal, Canada, in 1901, Mr. Hirschfield moved to Trenton, N. J., at the age of 18. He joined Panther-Panco in 1923 and became sales manager in 1932. He is credited with the development and introduction of the well-known Biltrite heel. A widow survives.

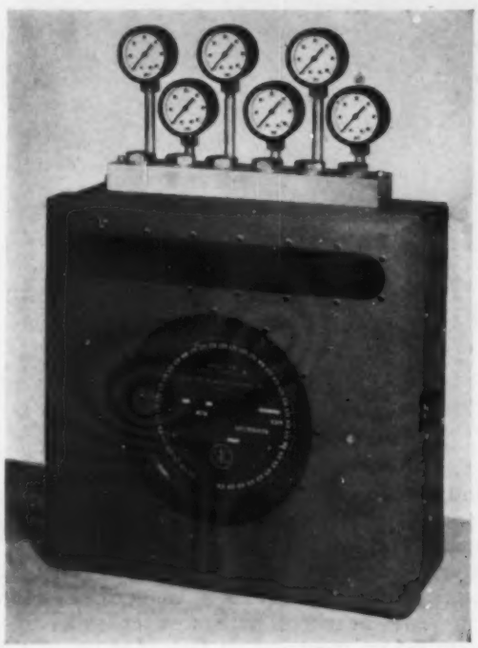
Fred C. Johnson

Fred C. Johnson, an executive of the Felt Products Manufacturing Co. of Chicago, died on September 13 at the age of 45. He was a resident of suburban Wilmette. A widow survives.

NEW EQUIPMENT

Seely PB2 Time Cycle Controller

Developed to control rubber and plastic molding equipment, the Seely PB2 Time Cycle Controller has been introduced by the Seely Instrument Co., 333 Fourth St., Niagara Falls, N. Y. The controller starts, times, correlates, and stops multiple operations in any process or machine cycle which can be actuated by air pressure or electricity. Air control is integral and does



not require the intermediary of solenoid valves. Pilot valve action is equally rapid in the longest schedules as well as the shortest. The time selector wheel carries 150 keys. These are selected to provide timing, to within .67 of 1% of the over-all time range of the instrument, for each successive event scheduled in the operation selector. Standard cycles are available to 750 minutes. The operation selector camshaft, with 10 working positions, operates pilot valves or precision switches in any desired sequence according to the operation selector keys which are pre-set. It is triggered by the impulses from the time selector wheel. Time and sequence sections are driven by gear-head motors of ample power. Resetting is automatic at completion of the program, requiring one second per unused operation.

The development of the **Model C-500 Impulse-Sequence Cycle Controller,** a multiple-cam time cycle controller, for timing mechanical operations, has been announced by the Bristol Co., Waterbury 91, Conn. It is designed for use on plant processes where a number of factors, such as the opening and closing of valves, switches, dampers, retorts, and presses, and the starting, stopping, or reversing of motor-drive pumps and blowers, must be accurately timed according to a fixed program.

Silicone News

DC SILICONES

SILASTIC* fights ice

PHOTO COURTESY THE GLENN L. MARTIN COMPANY

Silastic 121 is used to seal hot airducts in thermal anti-icing system designed for the Martin 2-0-2.

Not content with the more conventional de-icing systems designed to remove ice after it has formed, engineers of the Glenn L. Martin Company developed a thermal anti-icing system for the Martin 2-0-2. This system carries hot air to the leading edges of the wings and tail to keep ice from forming even under severe icing conditions.

Preliminary estimates indicated that impossible amounts of heat would be required. Experimentation proved, however, that conventional thermal calculations do not apply to flight conditions. Combining research with flight testing, the Martin engineers perfected a system so far advanced in principle and performance that it is setting new anti-icing standards for the aviation industry.

As in any original design, the choice of proper materials was of critical importance. A good example is the choice of Silastic 121 to seal the joints in the airducts which operate at 400°F. At such temperatures, other materials which were tested gave off alarming and malodorous volumes of smoke.

Without a heat-stable and resilient calking material, the efficiency of the heating system would have been severely reduced by leakages. Silastic 121 makes an almost perfect seal and permits the anti-icing system to operate at maximum efficiency even after long exposure to extremely cold, dry atmospheres.

Not used in this application but of related interest is the fact that ice does not adhere to Silastic. The many useful properties of the twelve Silastic stocks now available in commercial quantities are described in pamphlet No. V 21-1.

SILASTIC STAYS ELASTIC

*TRADE MARK DOW CORNING CORPORATION

DOW CORNING CORPORATION
MIDLAND, MICHIGAN

New York • Chicago • Cleveland • Los Angeles
In Canada: Fiberglas Canada, Ltd., Toronto
In England: Albright and Wilson, Ltd., London

Dow Corning
FIRST IN SILICONES

Dow Corning Silicone Products Include

FLUIDS
Damping
Hydraulic
Dielectric
Waterproofing
Lubricating
Diffusion Pump
Mold Release

GREASES
High Temperature
Low Temperature
Valve Lubricants
Stopcock
High Vacuum

COMPOUNDS
Ignition Sealing
Antifoam A

RESINS
Electrical Insulating
Laminating
Protective Coatings

SILASTIC*
Molding
Extruding
Coating
Laminating

*Trade Mark Dow Corning Corporation

No, lock the door *before* it's stolen. In this case, "it" means accuracy, production and profit. . . . Since 1927 the Schuster Magnetic Calender Gauge has consistently served four important ends:

1. It assures uniform thickness in your finished product, down to 1/1000".
2. It makes hand-miking unnecessary, saving time and expense.
3. It does away with the human equation, *preventing* mistakes.
4. It saves the stock sampled for calender testing.

The Schuster Gauge does these things by the simple expedient of setting rubber calender rolls to a desired thickness and holding them there. More lately, it has showed itself just as indispensable as "insurance" to synthetic rubber, plastics, cellulose and other materials. The instrument is simple in design, rugged in construction, practically without wearing parts, and adjustable to any thickness.

There is no "stock recipe". Every installation must be engineered to the job. May we tell you what the Schuster Magnetic Calender Gauge can do for you?

Write for our Bulletin "A"

THE MAGNETIC GAUGE COMPANY
60 EAST BARTGES STREET AKRON 11, OHIO

— SALES REPRESENTATIVES —
Eastern: BLACK ROCK MFG. CO. Bridgeport, Conn.
Western: H. M. ROYAL Los Angeles, Calif.

Gurley Motor-Driven Stiffness Tester

A new motor-driven stiffness tester, designed for rapid, consistent and accurate tests on rubber and rubber products, has been developed by W. & L. E. Gurley of Troy, New York. The tester measures the stiffness, or absence of it, of practically any thin flexible material, and its capacity is from light tissue paper or

thin cloth up to hard rubber and the heaviest single sheet box boards in common use. Such rubber products as raincoats and baby pants can be tested.

More convenient than hand-operated instruments, the Gurley stiffness tester has a balanced pointer which pivots in jewel bearings, and moves parallel to a sine scale mounted on the base. It is loaded below the center with weights of 5, 25, 50, or 200 grams, fastened 1, 2, or 4 inches from the pivots. The arm carrying the sample being tested is moved by a small-geared synchronous motor which is controlled by a reversing switch on the base.

To make a test a sample is first cut to a standard width and length (½, 1, or 2 inches wide, and from ½ to 4½ inches long), clamped in a movable clamp so that the free end overlaps the top of the pointer by ¼-inch; and pressed against the top of the pointer until it is bent sufficiently to assume a short arc, shortening it by the ¼-inch overlap. The pointer is then automatically released. The greatest reading of the pointer against the sine scale is averaged in both directions, to eliminate any effects of curl, and may be multiplied by a factor applying to one of 144 combinations of sample and loading weight. The product is expressed as the stiffness of the sample.

Designed especially for laminating and polishing plastic sheets, a complete **sheet production unit** has been added to the line of precision type platen presses featured by the R. D. Wood Co., Philadelphia, Penna. The unit includes the press with a loading and unloading elevator, a two-pressure unit for operation of press and elevator, and an automatic valve control system with complete automatic adjustable control of press operating cycle.

Black Rock Guillotine Cutter

Specifically designed and built for cutting cured and uncured rubber stock of square, rectangular, round and irregular section to length, the 4-MB Bench Type Guillotine Cutter has been introduced by the Black Rock Manufacturing Co., Bridgeport 5, Conn. The new unit will handle stocks to a maximum diameter

thickness of 1¼ inches and maximum width of 3 inches. The maximum length of cut is 3¾ inches. It will handle all cured rubber or rubber-like materials within its capacity and practically all uncured rubber or rubber-like materials, with the exception of those that are extremely soft. In the latter case, however, special cutting blanks can be furnished which will permit the cutting of such stocks. Although the machine is hand fed, it is especially fast in operation due to the roller type stop used, and cutting rates up to 500 per minute can be obtained. The unit is 22⅝ inches high, 20¾ inches deep, and 13 inches wide.

SURPRISING WHERE THAT GUY WILL HELP YOU

FOR FURTHER DETAILS, SEE AD ON PAGE 4

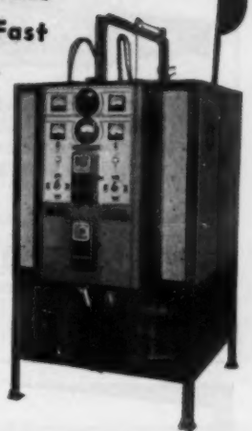
Test
RUBBER PRODUCTS

—for WEATHERING and FADING with
ATLAS-OMETERS

Twin-Arc
WEATHER - OMETER
Tests Results Twice As Fast

The new Atlas Twin-Arc Weather-Ometer has been developed to save time where speed in testing is essential.

Where Federal Specifications call for a definite number of testing hours in the Atlas single arc Weather-Ometer, this time can be cut in half in the Atlas Twin-Arc.



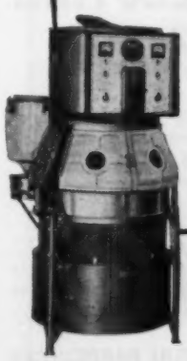
Exclusive Atlas Twin-Arc Weather-Ometer features:

1. Temperature control.
2. Unlimited range and control of Light and Water Spray Periods.
3. Adjustable and automatic timing.
4. Insulated test chamber.
5. Operates continuously 24 hours without manual attention.
6. Carbon cost 28c per day.
7. Full automatic—Safe to operate unattended overnight.
8. Control panel contains Volt and Ammeters — Time Meter—Light and Water Cycle switch—Automatic time cut off switch — Voltage adjusting switch — Direct reading thermal regulator — Reactance Coil (cut power cost in half).

The Single Arc Model is a popular machine where high speed is not required.

FADE-OMETER

The recognized standard machine of the textile trade for determining the light-fastness of materials. Specimens are rotated around the Atlas Enclosed Violet Carbon Arc—the closest approach to natural sunlight. Temperature of the filtered air is automatically controlled. Proper humidity is furnished by evaporation from a constant-level water reservoir. Available with a wide variety of specimen holders and exposure masks.



• Originators and sole manufacturers of accelerated testing devices for a quarter of a century. Fade-Ometer, Weather-Ometer, Launder-Ometer are used all over the world as accepted standard testing machines.

ATLAS ELECTRIC DEVICES CO.
361 West Superior Street, Chicago 10, Illinois

SIMPLEX
REG. TRADE MARK

RUBBER STRIP CUTTER
PATENTED

A PORTABLE machine capable of stripping slab rubber up to 1" thick at the rate of 20,000 feet in 8 hours. Any width desired.

SPECIAL FEATURES
- Has micro-adjustment for accurate widths.
- Equipped with water tank which feeds water to the slotted knife and to the cut.
- Has repulsion-induction motor which carries any overloads.
- Automatic sharpener device keeps knife keen and sharp.
- Has base with rollers and is very easy to handle.

Cuts within 1/64 inch to 1/100 inch tolerance depending on grades of rubber. Cuts a slab down to the last shaving. Cuts all grades of rubber including pure gum, sponge, etc. Cuts squarely—no rejects.

Now in use by many leading Rubber Manufacturers & Jobbers

Simplex Cloth Cutting Machine Co., Inc.

Manufacturers of a Complete Line of Cloth Cutting Machinery
270 West 39th St. New York 18, N. Y.
Cable Address—SIMPLEX, N. Y. *Phone*—WIsconsin 7-5547

FOR YEARS OF
Trouble-free
OPERATION . . .

the new 4-MB
Bench type
GUILLOTINE
Cutter

Specifically designed, and of sturdy construction, for cutting cured and uncured rubber or rubber like materials.

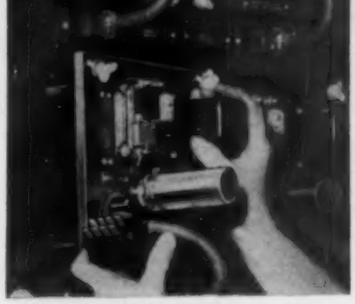
Fast . . Hand fed . .
A roller type stop enables cutting rates up to 500 per minute.

WRITE FOR FULL PARTICULARS

FINE BR TOOLS
BLACK ROCK MFG. CO.
179 Osborne Street Bridgeport 5, Conn.
Pacific Rep. Lombard Smith, Los Angeles, Cal. N. Y. Office, 261 Broadway

Electronic Control Unit Panel

A new development which gives promise of expanding the usefulness of electronics for industrial applications is the Quick-Change Electronic Control Unit Panel recently announced by Cutler-Hammer, Inc., 325 North 12th St., Milwaukee 1, Wisconsin. Of heavy-duty construction especially adaptable to rubber mill, steel mill, printing plant and similar applications,



the quick-change unit panel has been designed for rapid and easy servicing. The captive wing nut mounting and multiple contact plug arrangement permits instant substitution of a "spare" panel at any time to provide virtually uninterrupted machine operation whenever emergencies may arise that require removal of the electronic unit for testing or service-bench attention. Thus, no costly shutdown of production machines results during maintenance operations. Simplicity of design and better spacing of components on the panel further increase the savings in maintenance costs. This new development is available in a wide range of Cutler-Hammer electronic equipment.

Smaco Vulcanizer and Splicer

A new type of vulcanizer and splicing machine of direct interest to all manufacturers of extruded rubber goods is the Smaco Vulcanizer developed by the

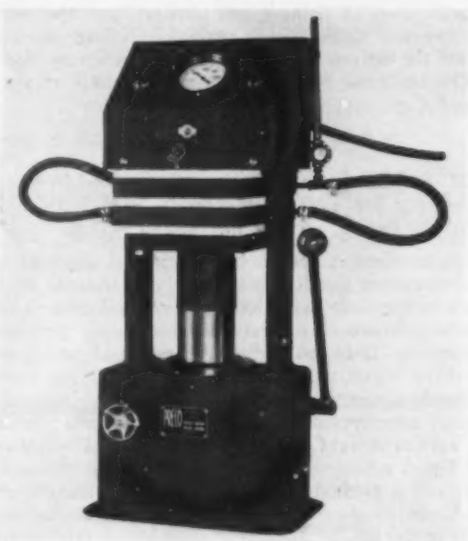
Sivon Machine and Manufacturing Co., Painesville, Ohio. Both the heating elements and the thermostats are of the cartridge type and an accuracy of plus or

minus 2 degrees can be maintained. Heating elements and thermostats are in both upper and lower platens and the thermostats are easily set to any desired temperature from 100° to 400° F.

The unit can be easily bolted to a bench or placed direct on an assembly line. Floor space required for each unit is 4½ x 12 inches. Voltage required is either 110 or 220. Cam operated, the unit can be quickly adjusted for correct pressure, from 5 to 2,000 pounds. Of steel construction, the unit was designed to supplement other units operated hydraulically or by air. Maintenance costs are low, and one worker can operate from 4 to 6 units, depending upon the number of cavities and length of heat required in the operation. The accompanying illustration shows the vulcanizer in closed position.

Preco Bench-Type Hydraulic Press

A relatively inexpensive bench-type hydraulic press for molding the new phenolic matrices which are finding widespread use in the making of rubber stamps and rubber printing plates is being offered by Preco Incorporated, 960 E. 61st St., Los Angeles 1, California. The press incorporates a 2-stage hydraulic hand pump which produces 40,000 pounds platen pressure. The platens, which are 8¾" x 12", are electrically or steam



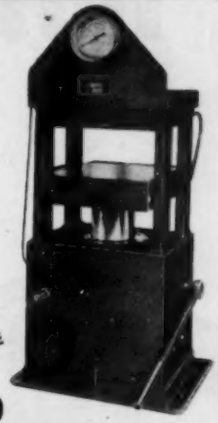
heated and water cooled. Extremely accurate temperature and hydraulic pressure controls are features of the press. Platens have 8 inches of daylight opening. According to the manufacturer, the press will complete the mold of any small popular size of phenolic matrix in a few minutes with accurate reproduction of all detail. These new phenolic materials have reduced the cost of matrix making. Once made, they can be stored indefinitely and re-casts made as often as desired, thus effecting further savings.

An Index to Volume 61 of RUBBER AGE will be found on Page 119 to 122 of this issue. Back indexes, if available, can be secured on request.

Announcing

A NEW MEMBER IN THE M&N LINE OF HYDRAULIC PRESSES

THE 30 TON ELECTRIC HOT PLATE MOLDING PRESS



$525.00

- Specially designed for the rubber and plastics industries where speed and ease of operation are essential to low cost production.
- May be used for production runs or laboratory control work.
- Available with any number of openings. Steam heated platens available at a slight extra cost. Larger platens and motor-driven hydraulic power units also available.
- This M & N Press features
  - Visual temperature indicator
  - Electrically heated thermostatically controlled platens
  - Dual Pressure hand pump
  - Compactness
  - Large platen area
  - All steel construction

SPECIFICATIONS

SIZE OF BASE	16" x 12"	DAYLIGHT OPENING	10"
OVERALL HEIGHT	42"	STROKE	6"
PLATEN SIZE	12" x 12"	RAM DIAMETER	5"
CAPACITY	30 tons	APPROX. WEIGHT	400 lbs.

M&N MACHINE TOOL WORKS, INC.

148 Orono Street — Clifton, N. J.

UTILITY FAN OR V-BELT COVERING MACHINE FOR VARIOUS SIZES AND CROSS-SECTION BELTS

UTILITY MANUFACTURING COMPANY

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Long Distance Phone Call

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Users of

Darex* Copolymers

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find that these unique high styrene copolymers give **outstanding** results in

NATURAL RUBBER COMPOUNDS.

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DEWEY AND ALMY CHEMICAL CO.

Organic Chemicals Division

CAMBRIDGE 40, MASSACHUSETTS

*T. M. Reg. U. S. Pat. Off.

REVIEWS

BOOKS

Flameproofing Textile Fabrics. Edited by Robert W. Little. Published by Reinhold Publishing Corp., 330 West 42nd St., New York 18, N. Y. 6 x 9 in. 410 pp. $6.75.

Because it was found evident early in the period of the recent war that a good deal of fundamental research was necessary to determine proper methods of flameproofing textiles for military purposes, the Office of the Quartermaster General requested the National Academy of Sciences to initiate a research program. Accordingly, in October, 1943, the National Research Council of the Academy contracted with Columbia University for the establishment of a research project in the Department of Chemical Engineering on the subject "The Flameproofing of Army Clothing." The results of these researches are contained in this volume, in addition to a great deal of related information on the general subject of flameproofing which was obtained through other Quartermaster Corps programs and research projects in other service laboratories.

The subject matter of the book, however, has been presented as a comprehensive survey of the flameproofing of textile fabrics rather than in the form of a technical report of specific investigations. The material has been divided into three sections covering, respectively, fundamentals, methods and applications. In this manner the reader can become familiar with the types of retardants available, the function of these agents in the prevention of flaming and glowing, and the methods by which they are applied and evaluated before attempting to appreciate the differences in performance when applied to fabrics. The book has 8 chapters in all, in addition to a subject index and a glossary of terms.

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A.S.T.M. Standards on Adhesives. Published by the American Society for Testing Materials, 1916 Race St., Philadelphia 3, Penna. 6 x 9 in. 48 pp. $1.25.

This is the first A.S.T.M. compilation of physical tests and definitions relating to adhesives. Twelve standards are included of which two include definitions of terms relating to adhesives, and the others are various standardized tests, prepared either by Committee D-14 on Adhesives or D-11 on Rubber and Rubber-Like Materials, which has developed three methods for testing rubber adhesives. Some of the methods cover the resistance of adhesives bonds to chemical reagents; tensile properties; applied weight per unit area of dried adhesive solids, and of liquid adhesive; the peel or stripping strength of adhesives; and a method for determining the strength properties of adhesives in shear. There is also a test for evaluating strength properties of adhesives in plywood type construction, and a recommended practice for determining the effect of artificial and natural light on the permanence of adhesives.

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Colloid Science: A Symposium. (American Edition). Published by the Chemical Publishing Co., Inc., 26 Court St., Brooklyn 2, N. Y. 5½ x 8½ in. 208 pp. $6.00.

The text of this book is taken from a series of lectures given as a course in colloid science at Cambridge University, Cambridge, England, under the auspices of the Royal Institute of Chemistry. Among the topics covered by the various lectures, given by outstanding experts, are phases and phase changes in monolayers, multilayers, emulsion stability, adsorbed film at the solid-liquid interface, electrical double layer, structure of micelles, electrophoresis, membrane equilibrium, and identification of bonds and structural units by infra-red spectra. A subject index is included.

The Chemistry of the Carbon Compounds. Vol. IV. The Heterocyclic Compounds and Organic Free Radicals. By F. Reindel (translated by M. F. Darken) and Ludwig Anschutz (translated by A. J. Mee). Published by the Elsevier Publishing Co., Inc., 215 Fourth Ave., New York 3, N. Y. 5½ x 8½ in. 498 pp. $12.00.

This latest American volume of Richter's "Organic Chemistry" is a literal translation from the twelfth German edition. The portion on "Heterocyclic Compounds" constitutes the third volume of the German original and that of "Free Radicals" constitutes Volume II, Part 2, of the original. With the publication of this fourth volume, the entire twelfth German edition is now available in an English translation. The current volume is a concise and comprehensive inventory of the most important organic chemical compounds. As in previous editions in this series, references are given wherever possible to the original journals and not to Chemisches Zentralblatt. The names of authors have also been added. A subject index is provided.

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Practical Latex Work (2nd Edition). By H. J. Stern. Published by the Blackfriars Press, Ltd., Smith-Dorrien Road, Leicester, England. 4¾ x 7½ in. 108 pp. 8s 6d (approximately $2.25).

Although the size of Dr. Stern's pocket-sized practical book on latex has not been increased in this revised edition, much new material has been included, and all chapters have been brought up-to-date. A good deal of information on such fundamental operations as compounding, dipping and coating is given, and a chapter on synthetic latices has been added. The book now consists of seven chapters, as follows: (1) Natural Latex; (2) Preparation of Mixes for Rubber Manufacturing; (3) Manufacture of Dipped Goods; (4) The Application of Latex to Textiles, Fibres and Paper; (5) Miscellaneous Processes; (6) Synthetic Latices; (7) Costings in Latex Work. The foreword is by Dr. Royce J. Noble. An American edition of this revised edition of Dr. Stern's work is understood to be in preparation.

•

The Story of Polymer. Polymer Corporation, Ltd., Sarnia, Ont., Canada. 8½ x 11 in. 36 pp.

As indicated by the title, this book tells the story of the Polymer Corporation, which in turn means the story of the Canadian synthetic rubber program. Attractively prepared and printed, the booklet tells the story of the manufacture of GR-S and Butyl in words and pictures, giving some insight into present day research activities and applications of the synthetic materials. A table of comparative qualities of vulcanized GR-S, Butyl and natural rubber is included.

SHORT BREAKDOWN WITH PHILBLACK-A

FOR FURTHER DETAILS, SEE AD ON PAGE 4

safeguard against dust

here's a non-foaming ANTI ADHESIVE IN LIQUID FORM...

TEXOLUBE-R

Applied by spray, dipping or brushing TEXOLUBE-R forms a continuous unbroken coating. Even when spray applied, there is no danger of bubbles, surface breaks or unprotected areas. TEXOLUBE-R is easier to handle and easier to use. Forty percent solid content . . . shipped as a fluid concentrate, not a paste, it is always ready for use . . . always easily and accurately measured and mixed.

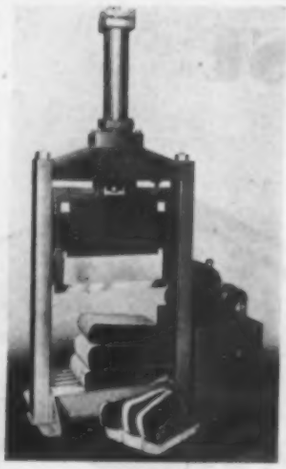
TEXOLUBE-R produces a "tack-proof," exceptionally tough, transparent film on all types of rubber, and has no harmful effect in any subsequent operations.

Send for free gallon sample or full drum on ten day trial basis.

THE TEXO CORP.
DANA & FLORAL
CINCINNATI 7, OHIO

TEXO

CRUDE RUBBER BALE CUTTER



Complete Unit

Fully Assembled

Hydraulic

Operation

High Production

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An efficient machine of simple design for cutting bales of crude, synthetic and reclaimed rubber or similar materials. Cuts without aid of water or other lubricant. One man operation—safety control.

•

SPADONE MACHINE COMPANY

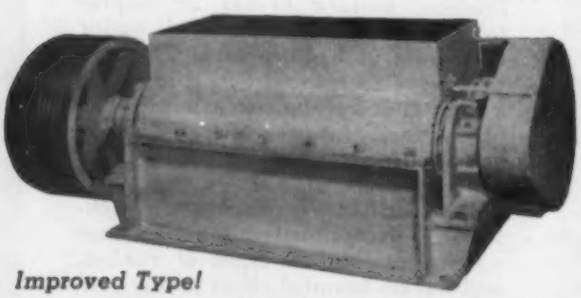
10 East 43rd St. New York 17, N. Y.

ROBINSON

UNIQUE

PROCESSING EQUIPMENT

SAW TOOTH *Crushers*



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BOOKLETS, CATALOGS, etc.

Di-Acro System of Die-Less Duplicating. (Catalog No. 46-11). O'Neil-Irwin Manufacturing Co., Lake City, Minn. 8½ x 11 in. 44 pp.

Many recent improvements which have been incorporated into the company's hand-operated machines for duplicating precision parts without dies are covered for the first time in this catalog. After a brief explanation of the origin and operation of the die-less duplicating process, the catalog illustrates and describes the latest models of the company's precision machines, together with representative parts made with each. Typical applications of the die-less duplicating machines in numerous industries are also shown. One section of the catalog is devoted entirely to answers and questions on Di-Acro benders, brakes, and shears.

•

Firestone Farm Market Manual. Firestone Tire & Rubber Co., 1200 Firestone Parkway, Akron 17, Ohio. 8⅛ x 10⅞ in. 80 pp.

Information on the selection, handling, and maintenance of all types of farm tires is presented in this manual. Tire specifications for all tractors, combines, and farm implements are given, together with up-to-date instructions on wheel cut-down change-overs and mounting, demounting and repairing of farm tires and tubes. Also included is data on tire construction, tire load capacities, recommended inflation pressures and liquid weighting of tractor tires, and information on retreading services. A discussion of Firestone's extensive farm program is also presented.

•

Wheelco Electronic Controls: Condensed Catalog. (Bulletin No. 3-6400). Wheelco Instruments Co., Harrison and Peoria Sts., Chicago 7, Ill. 8½ x 11 in. 20 pp.

Various types of industrial indicating, controlling, and combustion safeguard instruments manufactured by the company are described and illustrated in this catalog. The basic types of control systems to which the Wheelco standard line of control instruments can be adapted are also explained. A portion of the catalog is devoted to a brief description of the "Wheelco Electronic Control Principle," and illustrations show how this electronic circuit is incorporated into the company's controllers of millivoltometer, potentiometer, and resistance thermometer measuring types.

•

Consolidated Recording Oscillograph Type 5-101B. Consolidated Engineering Corp., 620 North Lake Ave., Pasadena 4, Calif. 8½ x 11 in. 12 pp.

The company's compact multi-channel recording instrument which can be used in the production line as well as in the laboratory is described in this bulletin. The construction and advantages of the instrument, together with its numerous applications, are briefly covered. Photographs and illustrations are effectively utilized to describe the operation of the oscillograph, and a section is included on its accessories and associated equipment.

•

Baldwin-Southwark Plastics Molding Presses. (Bulletin No. 251.) Baldwin Locomotive Works, Philadelphia 42, Penna. 8½ x 11 in. 20 pp.

This latest bulletin describes the company's high-speed compression molding presses and high-speed universal plunger molding presses now available from stock for the production of molded plastics and soft rubber products. Tables giving useful data on press specifications and dimensions are included. Also described are pumps adopted as standard equipment for all of the company's self-contained hydraulic molding presses, hydraulic accumulator systems of three available types for group operation of hydraulic presses, horizontal and vertical three-piston pumps, and hobbing and steam platen presses.

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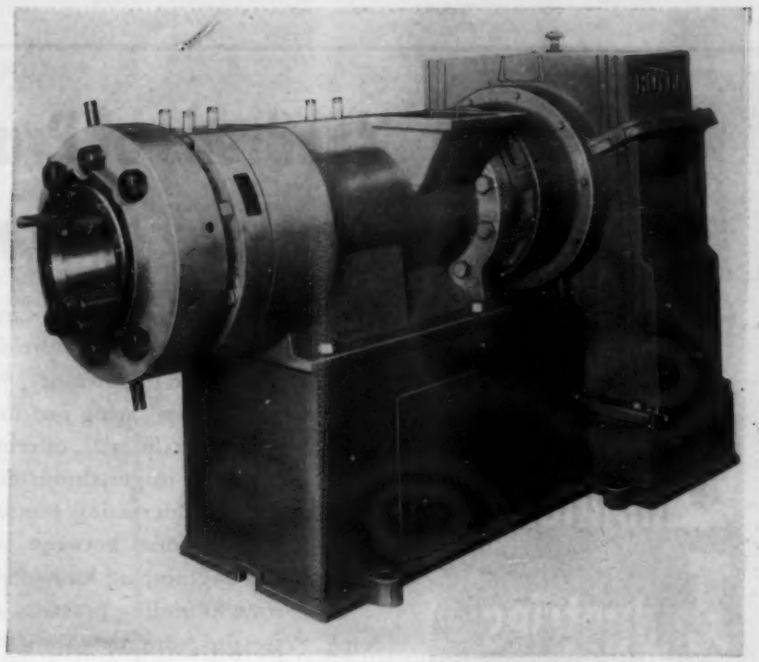

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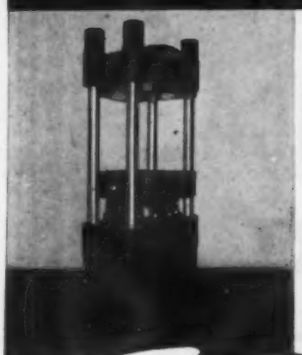
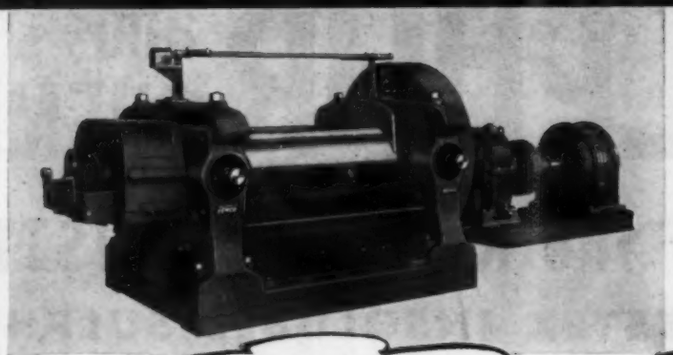


PRESSES



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636 California Street, San Francisco 8, Cal.
North Portland, Oregon—Houston 2, Texas

Sharples Rubber Chemicals. Sharples Chemicals Inc., 123 So. Broad St., Philadelphia 9, Penna. 8½ x 11 in. 36 pp.

This booklet lists for the first time the various rubber chemicals now being made and sold by the corporation, including its full line of ultra accelerators. Compounding characteristics are given in most cases, together with the specific properties of each material. The company's triple identification system for its accelerators, covering chemical name, accelerator number and color identification scheme, is explained. Other products made by the company, including several which are in the experimental stage, are also listed in the booklet.

•

Southwark Steam Platen Presses. (Bulletin 254). Baldwin Locomotive Works, Eddystone, Penna. 8½ x 11 in. 16 pp.

This bulletin describes the line of Southwark steam platen presses engineered and built by the company. It carries 23 photographs of miscellaneous types of presses from the standardized line to those custom built to individual specifications. The specific type of product or products for which each press is designed is indicated in all cases, and specifications are clearly given. Some of the company's laboratory presses are also described and illustrated in the booklet.

•

The Wire in Your Tire. National Standard Co., Niles, Michigan. 8½ x 11 in. 24 pp.

This booklet contributes a broader, clearer understanding of the exacting requirements, varied applications and vital functions of bead wire in tires during and following the operations that finally result in finished tires. The specific operations in which wire plays an important role are described and schematically illustrated. Various bead methods are discussed, and the application of rubber to bead wire is outlined. The advantages of steel wire in tires are emphasized.

•

Carbon Tetrachloride. Stauffer Chemical Co., 420 Lexington Ave., New York 17, N. Y. 8½ x 11 in. 32 pp.

Containing both technical and general data concerning carbon tetrachloride, this booklet is intended to serve as a ready reference book for those using the product. Some of the technical phases discussed are specifications, physical properties, azeotropic mixtures, vapor pressure-temperature relationship of carbon tetrachloride and other chlorinated hydrocarbons, solubility in water, solvent power, and testing procedures. Instructions for safe handling and use are also given.

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MARKETS

Rubber – Crude, Reclaimed and Scrap – Cotton – Ducks – Tire Fabrics – Sheetings

NEW YORK, OCT. 14, 1947

Natural Rubber

The price of spot rubber on the Commodity Exchange has moved in the unusual range of 313 points since our last report (September 15), rising from a low of 16.37 on September 18 to the high of 19.50 today (October 14). The increase is attributed largely to speculators who foresee large "killings" in the near future, now that the government has actively entered the market to increase its stockpile substantially. Incidentally, the entrance of the government as an active purchaser of natural rubber was made without previous knowledge of the industry, according to reliable reports. Higher price levels are expected before any downward movement may develop.

World-wide activity in natural rubber has stepped up considerably in recent weeks. The French Government, for example, is setting up a special government agency to purchase rubber from producers in Indochina at a fixed price. This subsidy program is tied in with a plan to increase rubber production in Indochina to 150,000 tons a year within the next ten years. An official Netherlands report has revealed that heavy damage was suffered, mainly by tea and rubber plantations, in several parts of Java after the outbreak of the Netherlands-Indonesian conflict.

Despite the reported trials and tribulations of planters in Malaya, the annual report of the United Planters Association of Malaya indicates that notwithstanding war casualties and privations in that country, the labor population in 1947 is greater than it was in 1941. The total number of workers in industry and government departments is set at 426,390 in 1947, as compared with 369,536 in 1941.

Today's quotations in the outside market, London and Singapore, follow:

Outside Market

No. 1 Ribbed Smoked Sheets:	
Spot	.19½
December	.18⅝
January-March	.18¼
Thin Latex Crepe:	
Spot	.34
January-March	.31½
Thin Brown Crepe, No. 2	.15
Ambers, No. 3	.15
Flat Bark Crepe	.13¼

London Market

(Standard Smoked Sheets)

January-March	17.73 - 17.84
April-June	17.63 - 17.73

Singapore Market

(Standard Smoked Sheets)

October	16.10 - 16.21

Synthetic Rubber

(Dry Types)

Butaprene NXM	.470 - .495
Chemigum 30 N4NS	.400 - .470
Chemigum 50 N4NS	.400 - .470
Chemigum N3	.450 - .520
Hycar OR-25	.400 - .425
Hycar OR-15	.470 - .495
Hycar OS-10	.400 - .425
Neoprene Type E	—— - .650
Neoprene Types CG and AC	—— - .500
Neoprene Types FR and KNR	—— - .750
Neoprene Type S	—— - .320
Neoprene Type NC	—— - .250
Perbunan 18	.390 - .415
Perbunan 26	.400 - .425
Perbunan 35	.470 - .495
Thiokol Type A	.370 - .470
Thiokol Type ST	.750 - .850
Thiokol Type FA	.520 - .620
Thiokol PR-1	.750 - .850

Scrap Rubber

The scrap rubber market continues stagnant, with scarcely any current demand worthy of the name. A few large dealers have bought mixed auto tires for Eastern reclaiming plants at $10 per ton and for Akron at $12 per ton delivered. What makes the present situation more difficult is that export prospects are dimmed by the current crisis in foreign trade which is being temporarily met by sharp curbs of dollar purchases by the dollar-short countries, like Britain and France. Prices shown below are those which were in effect several months ago:

(Prices to Consumers, Delivered Akron)

Mixed passenger tires	ton	$18.00
Headless truck tires	ton	24.00
Mixed truck tires	ton	18.00
Headless passenger tires	ton	24.00
No. 1 passenger peelings	ton	50.00
No. 1 truck peelings	ton	50.00
No. 2 passenger tubes	lb.	.07½
Red passenger tubes	lb.	.07½
Black passenger tubes	lb.	.06½
Mixed passenger tubes	lb.	.06¾
No. 2 truck tubes	lb.	.07¾
Red truck tubes	lb.	.07
Black truck tubes	lb.	.07
Buffings	ton	18.00

Reclaimed Rubber

The demand for reclaim, which dropped off slightly in recent months for the first time in several years, has picked up again considerably, the rising price of natural rubber being a major factor in the increasing demand. Although reclaimers are still in a position to handle all current orders, increased production may be required shortly if the demand continues to climb. The scrap supply continues in adequate amount. There have been no changes in the price structure since our last report. Current quotations follow:

Tires			
Black, Acid	lb.	.08¾ @	.09¼
Black, Digester	lb.	.08 @	.08½
Peels	lb.	.09 @	.09½
GR-S Whole Tire	lb.	.08½ @	.09
Inner Tubes			
Black	lb.	.12¾ @	.13¼
Red	lb.	.13½ @	.14
GR-S	lb.	.09½ @	.10
Butyl	lb.	.08½ @	.09
Shoe			
Unwashed	lb.	.08¼ @	.08¾

Cotton Tire Fabrics

There has been a tremendous spurt in the demand for cotton tire fabrics within the past two or three weeks, and fabric manufacturers are somewhat at a loss to account for it. Most tire manufacturers are requesting immediate deliveries, which is difficult in some cases. No change has been made in the price structure since our last report:

Standard, Peeler, 12/4/2	lb.	.7400
Standard, Peeler, 14/4/2	lb.	.7600
Standard, Peeler, 16/4/3	lb.	.7850
Extra Staple, Peeler 12/4/2	lb.	.8375
Extra Staple, Peeler, 14/4/2	lb.	.8575
Extra Staple, Peeler, 16/4/3	lb.	.8825

Chafers

14.4 oz. (per sq. yard)	lb.	.7150
9.25 oz. (per sq. yard)	lb.	.7450
11.65 oz. (per sq. yard)	lb.	.6450
8.9 oz (per sq. yard)	lb.	.6900

Cotton

The price of middling uplands on the Cotton Exchange has swung in the range of 230 points since our last report (September 15), high being 33.40 on September 16 and low 31.10 on September 30. The trend was downward for the latter part of September, but began to climb again early in October and gives indication at this writing of moving back toward the 33-cent mark.

The advance in cotton prices during the past two weeks was largely stimulated by a lower-than-expected crop estimate of 11,508,000 bales. The Crop Reporting Board reported this figure, which compares with 8,640,000 bales last year. The condition of the crop on October 1 was 72% of normal compared with 63% on the same date last year, the yield per acre being 261.3 pounds as compared with 235.3 pounds in 1946. The indicated supply of upland cotton this season total 13,559,000 bales, or 2,121,000 bales less than the supply of 15,680,000 bales for last year.

According to a recent statement by an expert of the Department of Agriculture made to the joint House-Senate Agriculture Committee, the parity formula for cotton should be modernized. It is proposed to change the parity for September 15 to .2489 cents without the inclusion of farm wages and .2625 cents with inclusion of such wages. This compares with the present parity of .2939 cents. The government control over acreages to basic crops would, however, be continued.

Rapid depletion of the supply of dollars abroad has made for an increasingly difficult export situation. The only cotton moving in volume is that going to Japan and Germany under government control.

Closing Rubber Prices on New York Comodity Exchange

FROM SEPTEMBER 16 TO OCTOBER 14

Date		Spot	Dec.	March	May	Sales
Sept.	16	16.62	16.40	16.15	16.10	47
	17	16.50	16.30	15.98	15.90	51
	18	16.37	16.15	15.90	15.85	47
	19	16.37	15.95	15.80	15.75	74
	20	——	——	——	——	—
	21	——	——	——	——	—
	22	16.75	16.25	16.07	15.98	56
	23	17.12	16.50	16.40	16.40	167
	24	17.25	16.70	16.55	16.60	83
	25	17.25	16.70	16.45	16.40	74
	26	17.12	16.55	16.35	16.25	44
	27	——	——	——	——	—
	28	——	——	——	——	—
	29	17.75	17.05	16.90	16.80	166
	30	18.12	17.49	17.15	17.10	170
Oct.	1	18.12	17.53	17.25	17.20	81
	2	18.12	17.35	17.15	17.15	80
	3	18.25	17.57	17.20	17.15	77
	4	——	——	——	——	—
	5	——	——	——	——	—
	6	18.37	17.75	17.40	17.30	129
	7	18.00	17.40	17.05	16.90	145
	8	18.50	17.80	17.35	17.20	55
	9	18.62	18.10	17.55	17.50	82
	10	18.86	18.25	17.62	17.57	103
	11	——	——	——	——	—
	12	——	——	——	——	—
	13	——	——	——	——	—
	14	19.50	18.47	17.85	17.80	177

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CURRENT MARKET PRICES

Of Rubber Chemicals and Compounding Ingredients

OCTOBER 14, 1947

Prices are, in general, f.o.b. works.
Range of prices indicates grade or quantity variations.
All trade or brand names are set off in quotation marks.
Abbreviations: bbls., barrels; c.l., carlot; l.c.l., less than carlot; dlvd., delivered; t.c., tank cars; min., minimum; dms., drums; cyl., cylinder.
* East of Mississippi.

—The arrangement of this section follows closely the Chemical Section of the 1945 RUBBER RED BOOK to which readers are referred to determine the classification of any material or brand name.
—Although suppliers of every material were contacted for price information, only those materials are listed for which quotations have been furnished us. The quotations are not guaranteed and prospective purchasers should contact suppliers for confirmation before placing orders. Suppliers are requested to send us regularly current prices on all of their materials used in the rubber industry.
—All requests for information or listings should be sent to Market Editor, RUBBER AGE, 250 West 57th St., New York 19, N. Y.

ACCELERATORS

"A-1"	lb.	.34	- .39
"A-10"	lb.	.40	- .47
"A-19"	lb.	.52	- .58
"A-32"	lb.	.59	- .69
"A-77"	lb.	.42	- .55
"A-100"	lb.	.42	- .55
"Accelerator No. 8" (dlvd.)	lb.	—	- .75
"Accelerator No. 49"	lb.	.40	- .42
"Accelerator No. 89" (dlvd.)	lb.	—	- 1.20
"Accelerator No. 122" (dlvd.)	lb.	—	- 1.30
"Accelerator No. 552" (dlvd.)	lb.	—	- 1.63
"Accelerator No. 808" (dlvd.)	lb.	.59	- .61
"Accelerator No. 833" (dlvd.)	lb.	1.13	- 1.15
"Acrin" (dlvd.)	lb.	—	- .65
"Advan"	lb.	.52	- .55
"Altax"	lb.	.35	- .38
"Arazate"	lb.	—	- 1.53
"Beutene"	lb.	.59	- .61
"B-J-F"	lb.	.34	- .36
"Butasan"	lb.	—	- 1.10
"Butazate"	lb.	—	- 1.10
"Butyl Eight"	lb.	1.00	- 1.05
"Captax"	lb.	.27	- .30
"C-P-B"	lb.	—	- 1.95
"Cumate"	lb.	—	- 1.60
"Cuprax"	lb.	.60	- .62
'Dibenzo G-M-F"	lb.	—	- 1.50
Diorthotolylguanidine (dlvd.)	lb.	.44	- .50
Diphenylguanidine (dlvd.)	lb.	.39	- .45
"El-Sixty"	lb.	.39	- .46
"Ethasan"	lb.	—	- 1.10
"Ethazate"	lb.	—	- 1.10
"Ethyl Thiurad"	lb.	—	- 1.25
"Ethyl Tuex"	lb.	—	- 1.25
Formaniline (dlvd.)	lb.	.36	- .37
"G-M-F"	lb.	—	- 1.95
"Good-rite Erie"	lb.	.60	- .62
"Guantal"	lb.	.43	- .50
"Hepteen"	lb.	.42	- .44
"Base"	lb.	1.80	- 1.85
"Ledate"	lb.	—	- 1.20
Mercaptobenzothiazole	lb.	.27	- .29
Mercaptobenzothiazyl Disulfide	lb.	.35	- .37
"Methasan"	lb.	—	- 1.20
"Methazate"	lb.	—	- 1.20
"Monex"	lb.	—	- 1.25
"Mono Thiurad"	lb.	—	- 1.25
"Morfex 33"	lb.	.60	- .62
"2-MT" (dlvd.)	lb.	.58	- .60
"Novac"	lb.	—	- 1.40
"A-13"	lb.	.65	- .67
"O-X-A-F"	lb.	.38	- .40
"Pentex"	lb.	.74	- .77
"Flour"	lb.	.12¼	- .12¾
"Phenex" (tons)	lb.	—	- .49
"Pipazate"	lb.	—	- 1.53
"Pip-Pip"	lb.	—	- 1.63
"R-2 Crystals"	lb.	—	- 1.55
"Rotax"	lb.	.39	- .42
"SA 52"	lb.	—	- 1.25
"SA 57"	lb.	—	- 1.20
"SA 62"	lb.	—	- 1.25
"SA 66"	lb.	—	- 1.60
"SA 67"	lb.	—	- 1.10
"SA 77"	lb.	—	- 1.10
"Safex"	lb.	—	- 1.15
"Santocure"	lb.	.53	- .60
"Selarate"	lb.	—	- 1.60
"Selenac" (Ethyl, Methyl)	lb.	—	- 1.60
"Setsit-5"	lb.	.75	- 1.00
"SPDX-G" (tons)	lb.	—	- .59
"Tellurac"	lb.	—	- 1.60
"Tepidone" (dlvd.)	lb.	—	- .63
"Tetrone" (dlvd.)	lb.	—	- 1.25
"A" (dlvd.)	lb.	—	- 1.85
Thiocarbanilide (dlvd.)	lb.	—	- .34
"Thiofide"	lb.	.35	- .42
"Thionex" (dlvd.)	lb.	—	- 1.25
"Thiotax"	lb.	.27	- .34
"Thiuram E" (and "M") (dlvd.)	lb.	—	- 1.25
"Trimene"	lb.	.54	- .56
"Base"	lb.	1.03	- 1.06
Triphenylguanidine (dlvd.)	lb.	—	- .50
"Tuads" (Ethyl, Methyl)	lb.	—	- 1.25
"Tuex"	lb.	—	- 1.25
"Ultra" (tons)	lb.	—	- .99
"L"	lb.	—	- 1.04
"Ureka"	lb.	.55	- .62
"Blend B"	lb.	.55	- .62
"Z"	lb.	.52	- .59
"Vistanex" (dms.)	lb.	—	- .42
"Vulcanex" (dlvd.)	lb.	—	- .45
"Z-B-X"	lb.	—	- 2.45

ACCELERATORS (Cont'd)

"Zenite" (dlvd.)	lb.	.37	- .39
"A" (dlvd.)	lb.	.42	- .44
"B" (dlvd.)	lb.	.39	- .41
"Zimate" ("Butyl," "Ethyl")	lb.	—	- 1.10
"Zimate, Methyl"	lb.	—	- 1.20

ACTIVATORS

Blue Lead, Sublimed (dlvd.)	lb.	.08½	- .09
Fish Oil, Hydrogenated, Fatty Acid			
"Hydrofol Acid" (dlvd.)	lb.	.25¾	- .29¼
"Hyfac 52" (dlvd.)	lb.	.27	- .28
"Neo-Fat H.F.O." (dlvd.)	lb.	.14¾	- .16¾
"Stearex Beads" (dlvd.)	lb.	.28	- .29½
Lime, Hydrated			
"Arrowhead"	ton	16.00	- 19.50
"Sierra"	ton	16.00	- 19.50
Litharge			
"Eagle" (dlvd.)	lb.	.17	- .17½
"FBS" (dlvd.)	lb.	.166	- .176
Magnesium Oxide, Heavy			
"General Magnesite"	lb.	.06	- .08
"Michigan No. 15"	lb.	.05	- .05½
"Permanente"	lb.	.05	- .06½
Magnesium Oxide, Light			
"Baker's" (Neoprene Grade)	lb.	—	- .28
"General Magnesite" (Neoprene Grade)	lb.	—	- .28
"General Magnesite" No. 101	lb.	—	- .175
"General Magnesite" Standard	lb.	—	- .22
"K & M"	lb.	—	- .28
"Michigan No. 30"	lb.	—	- .22½
"No. 40"	lb.	.25	- .28
"Witco Extra Light"	lb.	.25	- .27
Oleic Acid			
"Elaine O-18" (dlvd.)	lb.	.25½	- .27¼
"L.C.P. Red Oil"	lb.	.25½	- .27¼
Red Oil (20-24 Saponified) (dlvd.)	lb.	.25½	- .27¼
Palm Oil Fatty Acid (c.l.)	lb.	—	- .11
Potassium Oleate (drums)	lb.	—	- .29½
Red Lead			
"Eagle" (dlvd.)	lb.	.18	- .18½
"No. 2 RM" (dlvd.)	lb.	.181	- .191
Sodium Laurate (drums)	lb.	—	- .19
Sodium Oleate—Powder (drums)	lb.	—	- .35
Paste (drums)	lb.	—	- .20

ACTIVATORS (Cont'd)

Sodium Stearate—Powder (drums)	lb.	—	- .35
USP Grade (drums)	lb.	—	- .37
Stearic Acid, Single Pressed			
"S-24" (dlvd.)	lb.	.31½	- .32½
"Stearex B" (dlvd.)	lb.	.31½	- .32½
Stearic Acid, Double Pressed			
"Alba" (dlvd.)	lb.	.34¼	- .36¼
"S-2-A" (dlvd.)	lb.	.32	- .34
"S-2-B" (dlvd.)	lb.	.31½	- .33½
Stearic Acid, Other			
"Neo-Fat 1-60" (dlvd.)	lb.	—	- .36½
"Neo-Fat 1-65" (dlvd.)	lb.	—	- .38
"Stearite"	cwt.	36.00	- 38.00
White Lead Carbonate (dlvd.)	lb.	.15¾	- .16½
Zinc Laurate (c.l.)	lb.	—	- .29
"Laurex"	lb.	.33	- .34
Zinc Stearate	lb.	.29	- .31
"Aquazinc"	lb.	.20	- .35

Unclassified Activators

"Actifat" (dms.)	lb.	—	- .18
"Acidex"	lb.	.19	- .32
"Aero Ac 50"	lb.	.46	- .52
"165"	lb.	.43	- .45
"Barak" (dlvd.)	lb.	—	- .60
"Bunac K-17"	lb.	.23	- .25
"D-B-A"	lb.	—	- 1.95
"Delac J"	lb.	.55	- .57
"P"	lb.	.45	- .48
"Dibutylamine No. 117" (l.c.l., dms.)	lb.	—	- .69
"Palmalene" (drums)	lb.	—	- .15
"Dutch Boy Normasal"	lb.	—	- .38¾
"Polyac" (dlvd.)	lb.	—	- 1.40
"Ridacto" (drums)	lb.	.22	- .24
"Snodotte" (dlvd.)	lb.	.27½	- .28½
"SOAC" (min. 10 dms.)	cwt.	—	- 14.00
"Triamylamine No. 180" (l.c.l., drums)	lb.	—	- 1.01

ANTI-COAGULANTS

Anhydrous Ammonia (l.c.l.)	lb.	.02½	- .02¾
"National" (cyl., dlvd.)	lb.	.16	- .20
Aqua Ammonia (l.c.l., dms.)	lb.	—	- .03
"M.B.M." (l.c.l.)	lb.	—	- .35

ANTI-FOAMING AGENTS

"Aero Anti Foam H"	lb.	—	- .12
"Regular"	lb.	—	- .08½

ANTI-OXIDANTS

"Agerite Alba"	lb.	2.20	- .230
"Gel"	lb.	.55	- .57
"Hipar"	lb.	.76	- .78
"H. P."	lb.	.58	- .60
"Powder"	lb.	.43	- .45
"Resin"	lb.	.60	- .62
"Resin D"	lb.	.43	- .45
"Stalite"	lb.	.43	- .45
"White"	lb.	1.35	- 1.45
"Akroflex C" (dlvd.)	lb.	.58	- .60
"Aminox"	lb.	.43	- .45
"Antox" (dlvd.)	lb.	.54	- .56
"Aranox"	lb.	—	- 2.15
Benzoquinone	lb.	1.50	- 1.75
"Betanox Special"	lb.	.61	- .63
"B-L-E"	lb.	.43	- .45
"Powder"	lb.	.61	- .63
"B-X-A"	lb.	.43	- .45
Carvacrol	lb.	—	- .80
Chlorcarvacrol	lb.	—	- 2.00
"Flectol H"	lb.	.43	- .50
"Flexamine"	lb.	.58	- .60
Gallic Acid, Tech.	lb.	1.10	- 1.15
USP or NF	lb.	1.27	- 1.30
Hydroquinone	lb.	.90	- .94
Monomethylparaminophenol sulfate	lb.	2.40	- 2.90
"Neozone Standard" (dlvd.)	lb.	.66	- .68
"A" (dlvd.)	lb.	.43	- .45
"C" (dlvd.)	lb.	.47	- .49
"D" (dlvd.)	lb.	.43	- .45
"D Distilled" (dlvd.)	lb.	.48	- .50
"Parazone" (dlvd.)	lb.	—	- .68
"PDA-8"	lb.	.40	- .42
"10"	lb.	.46	- .48
"11"	lb.	.86	- .95
"14"	lb.	.60	- .62
"Perflectol"	lb.	.58	- .65
"Permalux" (dlvd.)	lb.	1.53	- 1.55
Pyrogallic Acid, Resublimed	lb.	2.60	- 2.65
USP Crystals	lb.	2.10	- 2.15

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Resorcin, Tech. (dlvd.)	lb.	——	.64
"Santoflex B"	lb.	.43	.50
"BX"	lb.	.57	.64
"Santovar-A"	lb.	1.30	1.37
"Santowhite"	lb.	1.40	1.52
"S.C.R." (tons)	lb.	——	.32
"Solux" (dlvd.)	lb.	1.48	1.50
"Stabilite" (tons)	lb.	——	.48
"Alba" (tons)	lb.	——	.69
"L" (tons)	lb.	——	.48
Tannic Acid, Tech.	lb.	.70	.79
"Thermoflex" (dlvd.)	lb.	1.48	1.50
"A" (dlvd.)	lb.	.70	.72
"C" (dlvd.)	lb.	.54	.56
Thymol	lb.	——	2.50
"V-G-B"	lb.	.43	.45

ANTI-SCORCHING AGENTS

"Good-rite Vultrol"	lb.	.50	.55
"Retarder W" (dlvd.)	lb.	——	.36
Salicylic Acid, Tech.	lb.	——	.33
"Sodium Acetate 60-62% Crystals"	lb.	——	.05½

ANTISEPTICS AND GERMICIDES

Formaldehyde (barrels)	lb.	——	.0695
"G-4"	lb.	.95	2.50
"G-11"	lb.	3.50	5.50
Methyl Para Hydroxy Benzoate	lb.	——	1.25
Ortho Cresol (26°-27°)	lb.	——	.18
"Soligen Drier"—Copper 8% (drums)	lb.	——	.21
"Zinc 8%" (dms.)	lb.	——	.19¼

AROMATICS (DEODORANTS)

"Arolene 1980" (c.l.)	lb.	——	.10
"2286"	lb.	——	.25
"2553" (c.l., dms.)	lb.	——	.13
"Bouquet 149"	lb.	——	3.00
Coumarin	lb.	2.75	2.90
"Curodex 19"	lb.	——	4.75
"188"	lb.	——	5.75
"198"	lb.	——	6.75
"D-6 Masking Perfume"	lb.	——	1.35
"Deodorant 65"	lb.	——	1.00
"Deodorant L-37"	lb.	2.00	2.40
"L-44"	lb.	2.50	2.90
"N.L.T.X."	lb.	1.85	2.15
"Latex Perfume 5"	lb.	——	3.25
"6"	lb.	——	7.50
"9"	lb.	——	.65
"Neutroleum Delta"	lb.	——	2.40
"Gamma"	lb.	——	3.40
"Parador A"	lb.	2.00	2.50
"B"	lb.	.65	1.00
"C"	lb.	2.75	3.25
"D"	lb.	1.50	2.00
"E"	lb.	.25	.55
"Perfume Oil Bouquet Vanilla M"	lb.	2.40	2.75
"Rodo No. 0"	lb.	4.00	4.50
"No. 10"	lb.	5.00	5.50
"Rubbarome" (dms.)	lb.	1.10	2.10
"Rubber Perfume 7"	lb.	——	9.15
"12"	lb.	——	1.90
"Russian Leather 7"	lb.	——	4.10
Vanillin	lb.	2.35	2.40

BLOWING AGENTS

Ammonium Bicarbonate (dlvd.)	lb.	.06¼	.09¼
"Blowing Agent No. 15"	lb.	——	.35
Sodium Bicarbonate, Tech. (c.l., bags)	cwt.	——	1.85
"Sponge Paste"	lb.	——	.20
"Unicel" (dlvd.)	lb.	——	.60
"ND" (dlvd.)	lb.	——	1.00
Urea	ton	73.00	90.00

BONDING AGENTS

"Durez 12987"	lb.	.48	.53
"Interlake Resin No. 4162"	lb.	——	1.50
"MDI"	lb.	7.25	7.75
"50"	lb.	3.60	3.85
"Reanite"	gal.	6.75	7.25
"Rex Compound 482"	gal.	——	1.05
"Ty-Ply Q" (and "S")	gal.	6.75	8.00

COAGULANTS

Acetic Acid—56% (bbls.)	cwt.	——	6.75
Glacial—99½% (bbls.)	cwt.	——	11.30
Calcium Nitrate, Tech, Crystals	lb.	.12½	.15
Hydroxyacetic Acid—70% (dms.)	lb.	.059	.084
Zinc Nitrate, Tech.	lb.	——	.21½

COLORING AGENTS

Black

Carbon Black—See *Reinforcing Agents*			
"Aquablak B" (also "M," "R")	lb.	.08¼	.09¼
"Aquablak S"	lb.	.07¾	.08¾
"Lampblack No. 10"	lb.	.06	.09
"Mapico Black Iron Oxide" (50 lb. bags)	lb.	.0925	.095
"Raven Black Pure Iron Oxide"	cwt.	9.25	9.50

Blue

"Blue GD, Dispersed" (dlvd.)	lb.	——	3.95
"Paste" (dlvd.)	lb.	——	1.64
"Blue N" (dlvd.)	lb.	——	.945
"Blue YD, Dispersed" (dlvd.)	lb.	——	2.50
"Milori Blue 11840" (dlvd.)	lb.	——	.42
"Monastral Fast Blue CP" (dlvd.)	lb.	——	3.85
"PCD, Dispersed" (dlvd.)	lb.	——	2.50

Blue (Cont'd)

"Ramapo Blue"	lb.	3.40	5.45
"Rubber Blue X-893"	lb.	——	.82
"Stan-Tone Blue"	lb.	1.40	4.40
Ultramarine	lb.	.12	.30
"Victoria Blue BP-262-D"	lb.	2.25	2.30

Brown

Brown Iron Oxide	lb.	——	.10
"Mapico Brown" (50 lb. bags)	lb.	——	.12

Green

Green Chromium Oxide, Pure	cwt.	29.50	36.50
Green Chromium Oxide, Pure, Hydrated	cwt.	70.00	85.00
"Green FD, Dispersed" (dlvd.)	lb.	——	1.50
"Monastral Fast Green GSD, Dispersed" (dlvd.)	lb.	——	3.20
"GSD Paste" (dlvd.)	lb.	——	1.10
"Permansa Green CP-594"	lb.	——	1.35
"Pigment Green B"	lb.	——	1.50
"GL-652D"	lb.	.88	.93
"Ramapo Green"	lb.	4.00	4.05
"Rubber Green X-1291"	lb.	——	1.35
"Stan-Tone Green"	lb.	1.60	3.60
"Utility Green"	lb.	——	.30

Orange

"Molybdate Orange"	lb.	——	.39
"Orange F" (dlvd.)	lb.	——	3.35
"FD, Dispersed" (dlvd.)	lb.	——	2.50
"Rubber Orange X-2065"	lb.	——	2.60
"Stan-Tone Orange"	lb.	——	2.20

Purple

Purple Oxide	lb.	——	.08

Red

Cadmium Red	lb.	.95	1.25
"Cadmolith Red" (bbls.)	lb.	1.10	1.35
"Graphic Red" (dlvd.)	lb.	——	.70
Indian Red, Pure	cwt.	9.10	10.25
"Jozite"	lb.	.08¼	.08¾
"Mapico Red 297" (50 lb. bags)	lb.	.10	.10¼
"Oximony" Iron Oxide	lb.	——	.09
Red Iron Oxide, Light	cwt.	9.60	10.75
"Red PB" (dlvd.)	lb.	——	1.80
"PBD, Dispersed" (dlvd.)	lb.	——	1.65
"2B" (dlvd.)	lb.	——	1.65
"2BD, Dispersed" (dlvd.)	lb.	——	1.50
"Rubanox Red" CP-762 (dlvd.)	lb.	——	1.30
"Rubber Red CP-339" (dlvd.)	lb.	——	1.05
"Rubber Red RT-364"	lb.	——	.75
"Rubber Red RT-425"	lb.	——	.75
"Rubber Red X-1148"	lb.	——	.75
"Solfast Red CP-563" (dlvd.)	lb.	——	1.80
"CP-787" (dlvd.)	lb.	——	1.30
"Stan-Tone Red"	lb.	1.10	2.20
"Watchung Red"	lb.	——	1.80

White—Lithopone

"Albalith"	lb.	.05½	.05¾
"Astrolith"	lb.	.055	.0578
"Cryptone No. 19"	lb.	.07	.07¼
"CB No. 21"	lb.	.07	.07¼
"Eagle"	lb.	.06	.06¼
"Permalith"	lb.	.04¼	.04½
"Ponolith"	lb.	.06	.06¾
"Sunolith"	lb.	.055	.0578

White—Titanium Pigments

"Rayox"	lb.	.15½	.18½
"Ti-Cal"	lb.	.06¼	.06¾
"Ti-Pure"	lb.	.16½	.19½
"Titanox A"—all grades (dlvd.)	lb.	.14½	.15¼
"B-30" (dlvd.)	lb.	.05¾	.06
"C" (dlvd.)	lb.	.05½	.05¾
"RA"—all grades (dlvd.)	lb.	.15½	.16¼
"RC-HT" (dlvd.)	lb.	.05½	.05¾
"Zopaque"	lb.	.16½	.17¼

White—Zinc Oxide (American Process)

"AZO-ZZZ 11" (and "22, 33, 44, 55")	lb.	.10	.10¼
"Eagle"	lb.	.10	.10¼
"Horse Head Special"	lb.	.09½	.09¾
"XX Red"	lb.	.09½	.09¾
"St. Joe Black Label"	lb.	.09½	.09¾
"Green Label"	lb.	.09½	.09¾
"Red Label"	lb.	.09½	.09¾

White—Zinc Oxide (Dispersed)

Dispersed Zinc Oxide	lb.	——	.12

White—Zinc Oxide (French Process)

"AZO-ZZZ 66"	lb.	.12¼	.12½
"Florence Green Seal"	lb.	.11¼	.11½
"Red Seal"	lb.	.10¾	.11
"White Seal"	lb.	.11¾	.12
"Kadox 72"	lb.	.09½	.09¾
"Black Label"	lb.	.09½	.09¾
"Red Label"	lb.	.09½	.09¾
"U. S. P. 12"	lb.	.12¾	.13

White—Zinc Sulfide

"Cryptone ZS-800"	lb.	.10	.10¼

Yellow

"Anchor Brand Pure Iron Oxide"	cwt.	7.75	8.00
"Cadmolith Yellow" (bbls.)	lb.	——	.85
Chrome Yellow	lb.	——	.27
"Chrome Yellow 12310"	lb.	——	.18
"Ferrox"	cwt.	7.50	8.50

Yellow (Cont'd)

"Mapico Yellow" (50 lb. bags)	lb.	.07¾	.08
"Rubber Yellow X-954"	lb.	——	.80
"Stan-Tone Yellow"	lb.	1.20	1.75
Toluidine Yellow	lb.	——	1.60
"YL-556-D"	lb.	.75	.80
"Oximony" Iron Oxide	lb.	——	.06¾
"Yellow G" (dlvd.)	lb.	——	1.95
"GD, Dispersed" (dlvd.)	lb.	——	1.65
"HN" (dlvd.)	lb.	——	1.48
Zinc Yellow	lb.	——	.19

DISPERSING AGENTS

"Agchem SA-19"	lb.	——	.30
"SA-20"	lb.	——	.70
"Aquasol-AR 90%"	lb.	——	.14¼
"Beaconol 52"	lb.	.60	.75
"Darvan No. 1" (and No. 2")	lb.	.19	.30
"Dilex"	lb.	——	.32
"Dispersaid"	lb.	1.25	1.35
"Halloid"	lb.	.03¾	.09½
"HornKem No. 1"	gal.	——	1.60
"No. 3G"	gal.	——	1.75
"No. 12"	lb.	——	.17
"Marasperse CB"	lb.	.10½	.18
"N"	lb.	.09	.10
"Ramol PW"	lb.	.18	.19
"Rubbex"	lb.	——	.25¾
"Stan-Chem BQC"	lb.	.12¼	.17¼
"1067"	lb.	——	.13½
"1471"	lb.	.1687	.2187
"2251"	lb.	.12¼	.17¼
Triethanolamine (drums) dlvd.)	lb.	.19	.20
"Triton R-100"	lb.	.15½	.25
"Yelkin TT"	lb.	.36¾	.45¾
"Zinsper"	lb.	——	.15

EXTENDERS

"Advagum 1098"	lb.	——	.85
"Bunaweld Polymer No. 780"	lb.	——	.22
"No. 5514"	lb.	——	.30
"D-92" (and "D-93") (dms.)	lb.	——	.12
"Extender 600"	lb.	——	.208
"Multi-Plast MV 60 Emul."	gal.	.32	.37
"Naftolen MV 60 Emul."	gal.	.60	.65
"HV 60 Emul."	gal.	.75	.80
"PR-162 Latex" (dms.)	gal.	1.00	1.60
"Synprolac"	lb.	——	.19
"Synprowax"	lb.	.16	.19
"Vistanex Polybutene"	lb.	——	.32

FILLERS (Inert and Reinforcing)

Abrasives			
"Carbonite"	lb.	.15	.95
"Lionite"	lb.	.09¼	.90
Aluminum Hydrate	lb.	——	.17
Aluminum Silicate			
"Silical"	ton	37.00	55.00
"Marter White"	ton	20.50	30.00
Barium Carbonate (l.c.l.)	ton	77.00	85.00
Barytes			
No. 1 Floated, White	ton	30.10	41.55
No. 2 Floated, Unbleached	ton	28.10	38.95
"No. 22 Barytes" (c.l.)	ton	——	18.37
"Foam A"	ton	——	30.10
Bentonite (c.l.)	ton	——	11.00
"SPV Volclay" (c.l.)	ton	——	11.00
Blanc Fixe	ton	72.50	120.00
Blanc Fixe	ton	60.00	120.00
Calcium Carbonate			
"Atomite" (c.l.)	ton	——	30.00
"B.I. White No. 1" (c.l.)	ton	——	7.50
"Blue-Star XX"	ton	——	45.00
"B.I. White No. 1" (c.l.)	ton	——	7.00
"Calcene T"	ton	40.00	50.00
"Camelwhite"	ton	27.50	30.00
"Kalite" (c.l.)	ton	——	33.00
"Kalvan" (c.l.)	ton	——	105.00
"Lesamite" (c.l.)	ton	——	27.50
"Lim-Cal" (c.l.)	ton	——	12.50
"Millical" (c.l.)	ton	——	22.00
"Sierracal"	ton	15.00	18.50
"Suspenso" (c.l.)	ton	——	20.00
"Swansdown" (c.l.)	ton	——	18.00
"Witcarb R" (c.l.)	ton	——	105.00
"R-12" (c.l.)	ton	40.00	60.00
Calcium Silicate			
"Silene EF"	ton	110.00	120.00
Calcium Sulfate, Anhydrous			
"Snow White Filler"	ton	——	17.00
Calcium Sulfate, Hydrous			
"Crysta-Cal" (c.l.)	ton	——	12.50
"Terra Alba No. 1"	ton	12.00	14.40
Chalk Whiting (l.c.l.)	lb.	.0150	.0175
"Recco Paris Whiting"	ton	——	25.00
Clay			
"Alsite" (c.l.)	ton	——	13.00
"Aluminum Flake"	ton	15.50	60.00
"A.S.P. No. 1" (c.l.)	ton	——	30.00
"No. 11" (c.l.)	ton	——	40.00
"Buca" (c.l.)	ton	——	44.00
"Catalpo" (c.l.)	ton	——	33.00
"Champion"	ton	——	13.00
"C.S.D." (c.l.)	ton	——	12.00
"Crown"	ton	——	13.00
"Dixie" (c.l.)	ton	——	13.00
"Hydratex R"	ton	28.00	40.00
"Kaolloid Clay" (c.l.)	ton	——	10.50
"Markham" (c.l.)	ton	——	13.00
"McNamee" (c.l.)	ton	——	12.50
"Oldham"	ton	——	13.00
"Paragon"	ton	12.50	27.20
"Recco" (c.l.)	ton	——	13.00

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FILLERS (Cont'd)

"Stellar-R"	ton	—	50.00
"Suprex"	ton	13.00	27.70
"Upton"	ton	19.50	21.00
"Whitetex" (c.l.)	ton	—	50.00
"Witco No. 1" (c.l.)	ton	13.00	33.00
"No. 2" (c.l.)	ton	13.00	33.00
Diatomaceous Earth	ton	30.00	50.00
"Kaylorite" (c.l.)	ton	—	30.00
Dolomite (c.l.)	ton	11.00	12.00
Flock			
Cotton	lb.	.08½	.20
"Filfloc F 40-9000"	lb.	—	.16
"Filfloc F 6000"	lb.	—	.22
Rayon, bleached or dyed	lb.	.85	1.50
Rayon, grey	lb.	—	.18
"Solka-Floc" (l.c.l.)	lb.	.05	.12
Wool, bleached or dyed	lb.	.70	1.00
Glue, Bone (dlvd.)	lb.	.16½	.18½
Ground Glass (l.c.l.)	lb.	.04	.06
Leather, Shredded	lb.	.05	.17
Lignin	lb.	.03	.06
"Indulin"	lb.	—	.09
Limestone, Pulverized	ton	3.25	10.00
"Micro Velva"	ton	30.00	32.00
"Velvet Filler, Regular"	ton	16.00	18.00
Magnesium Carbonate	lb.	.07¼	.08¼
"Clearcarb"	lb.	.10	.10½
"K & M"	lb.	.07¼	.08¼
Magnesium Silicate	ton	18.00	35.00
"Airex"	ton	22.50	23.50
"Asbestol"	ton	17.00	25.00
"Blue Star Talc"	ton	—	21.00
"L.S. Silver"	ton	24.50	26.50
"Sierra White"	ton	20.75	22.75
Mica	lb.	.03	.07
"Concord"	lb.	.06½	.06¾
"Micro-Mica"	lb.	.06½	.07
"Mineralite" (c.l.)	ton	30.00	40.00
"Silversheen"	lb.	.06¼	.06¾
"Triple A Mica" (c.l.)	ton	—	25.00
"Wet Ground Mica No. 160"	lb.	.05¼	.06¾
Mineral Black			
"Keystone 126"	ton	—	13.00
Pumice	lb.	.03	.05
Pyrophyllite			
"Pyrax A" (c.l.)	ton	—	11.50
"WA" (c.l.)	ton	—	13.00
Silica	ton	16.00	27.00
"Blue Star"	ton	—	21.50
Slate, Powdered (l.c.l.)	ton	15.00	20.00
Talc, Domestic	ton	9.00	20.00
Walnut Shell Flour	ton	35.00	65.00
Whiting, Commercial	ton	8.00	20.00
"Cameline" (c.l.)	ton	8.50	10.00
"C-C-O White"	ton	—	14.50
"Keystone" (c.l.)	ton	—	16.00
"Snowflake" (c.l.)	ton	—	18.00
"Veroc" (c.l.)	ton	—	8.50
"York White" (c.l.)	ton	—	9.00
Wood Flour	ton	20.00	62.18

FINISHING MATERIALS, SURFACE

"Beaco Finishes"	gal.	1.05	1.35
"Black Out"	gal.	4.50	8.00
Shellac, Orange Gum	lb.	.70	.80
"VanWax"	gal.	1.25	1.30

FLAME RETARDANTS

Chlorinated Paraffin	lb.	.10	.25
"Halowax"	lb.	.24	.30
"Zinc Borate 3167"	lb.	.12	.16¾
"Zyrox"	lb.	.35	.45

LUBRICANTS, MOLD

"Aquadag"	lb.	3.15	3.45
"Aquarex L Paste" (dlvd.)	lb.	—	.85
"MDL Paste" (dlvd.)	lb.	—	.32
Borax, Granular (l.c.l.)	ton	70.00	80.00
"Colite Concentrate" (dms.)	gal.	—	.90
"Concentrex"	lb.	—	.20
"Dipex"	lb.	.14	.18
"Dri-Lube"	lb.	—	.18
"Erlen Mold Lubricant"	gal.	1.00	1.25
"Glycerized Lubricant"	gal.	—	1.50
"Glydag"	lb.	1.30	2.00
"G.T.M.C. Solution"	lb.	1.05	1.35
"Kokobace"	lb.	—	.12
"Latex-Lube" (dlvd.)	lb.	—	.23
"Liqui-Lube" (dlvd.)	lb.	—	.15½
"Lubrex"	lb.	.25	.30
"Migralube"	lb.	—	.30
"Moldex"	lb.	—	.12½
"Moldeze No. 1"	gal.	—	36.00
"No. 2"	gal.	—	10.00
"No. 3"	gal.	—	25.00
"Mold-Slick"	lb.	.202	.215
"Orvus WA Paste" (dms.)	lb.	—	.25
"Prodag"	lb.	.25	.38
"Redotex Flakes" (dlvd.)	lb.	.20½	.21½
"Powder" (dlvd.)	lb.	.21½	.22
"Rubber-Flo"	gal.	—	1.15
"Rubber-Glo"	gal.	—	.94
"Rusco Mold Paste"	lb.	.12	.18
"Sericite" (l.c.l.)	ton	65.00	75.00
"Ulco Mold Soap"	lb.	.16	.29
"Werkrite Flakes" (dlvd.)	lb.	.16½	.17
"Powder" (dlvd.)	lb.	.17½	.17¼

LUBRICANTS, RUBBER

Lithium Stearate	lb.	.75	.77
Propylene Stearate (drums)	lb.	—	.40
"Rubberol"	lb.	—	.18½

LUBRICANTS, RUBBER SURFACE

Barium Stearate	lb.	.55	.56
Calcium Stearate	lb.	.51	.53
"Orel"	gal.	1.85	2.00
Polyethylene Glycol	lb.	.25	.26

LUBRICANTS, RUBBER SURFACE (Cont'd)

"Rexanol A"	lb.	—	.11
"Separex A"	lb.	—	.15
Zinc Stearate	lb.	.54	.55

MOLD CLEANERS

"Actusol" (dlvd.)	gal.	—	1.45
"Metso 99"	cwt.	3.05	4.45
"Granular"	cwt.	2.50	3.55
"Rubber-Sol"	gal.	—	1.89
"Shelblast"	ton	80.00	140.00
Sodium Silicate	cwt.	.80	1.40
"Sprex A.C." (dlvd.)	lb.	—	.15½

PEPTIZING AGENTS

Carbothermic Magnesia	lb.	—	.13½
"Peptizer P-12"	lb.	.84	.90

PLASTICIZERS & SOFTENERS

"AA" (drums)	lb.	—	.15¾
"Acto 500"	lb.	—	.09
"Adipol BCA" (dms.)	lb.	.43½	.44
"Amalgamator Z-4"	lb.	—	.30
"American" Pine Tar	gal	.30	.41
"Bardex"	lb.	.05	.05¼
"Bardol"	lb.	.02¼	.03
"B"	lb.	.05	.05¼
"Bayol D"	gal.	.29½	.31½
"F"	gal.	.46	.49
Beeswax, Refined & Bleached	lb.	.64	.74
Yellow Refined	lb.	.63½	.68
"Bondogen"	lb.	.55	.60
"B.R.C. No. 20"	lb.	.0105	.0115
"B.R.H. 2"	lb.	.0225	.0235
"BRS 700"	lb.	.012	.018
"B.R.T. 3"	lb.	.019	.02
"4"	lb.	.02	.021
"7"	lb.	.0215	.0225
"B.R.V."	lb.	.03	.0375
"Bunarex" Resins	lb.	.05½	.06½
"Bunatak M"	lb.	—	.20
"O"	lb.	—	.18
"R"	lb.	—	.14
"U"	lb.	—	.15
"No. 21"	lb.	—	.08
"No. 90"	lb.	—	.08
"No. 865"	lb.	—	.17
"No. 1080"	lb.	—	.09½
Burgundy Pitch	lb.	.1051	.1115
"Butac"	lb.	.1275	.1650
Butyl Benzyl Sebacate	lb.	.75	.77½
Butyl Palmitate	lb.	—	.26⅔
Butyl Roleate	lb.	.16	.18
"BWH-1"	lb.	—	.11
"Campol" (t.c.)	ton	—	42.00
Candelilla Wax, Prime	lb.	.78	.85
"Carbonex"	lb.	.03	.03½
"S" Flakes	lb.	.04½	.05
"S" Plastic	lb.	.0435	.046
"Carbowax 4000" (drums)	lb.	.29	.30
"Cardolite 615"	lb.	.37	.40
"816"	lb.	.25½	.28½
"5858"	lb.	.42	.46
Carnauba Wax, Crude	lb.	1.30	1.35
Refined	lb.	1.40	1.45
Substitute	lb.	.45	1.08
Yellow	lb.	1.75	1.80
"Celluflex 142" (and "179") (drums)	lb.	—	.31½
Ceresine Wax	lb.	.15	.20
"Contogum"	lb.	.06¾	.10¼
"Cumar Resins"	lb.	.05½	.14½
"Darex Copolymer X11"	lb.	.40	.50
"X54"	lb.	.42	.60
"D.B.M."	lb.	—	.30
Degras, Common	lb.	.10	.14
Diamylphenol (l.c.l., drums)	lb.	—	.21
Dibenzyl Ether (drums)	lb.	—	.40
Dibenzyl Sebacate	lb.	.66	.70½
Dibutyl Phthalate	lb.	.32	.39
Dibutyl Sebacate—Tech.	lb.	.49	.51½
C.P.	lb.	.51	.53½
Dicapryl Phthalate	lb.	.24½	.27
"Di-Carbitol Phthalate" (dms.)	lb.	.37½	.38
Dicyclohexyl Phthalate	lb.	—	.43
"Dielex"	lb.	.05½	.06
Diethyl Phthalate (t.c.)	lb.	.31½	.38½
Dihexyl Sebacate	lb.	.47	.49½
"Monoplex 5"	lb.	.98	1.00
Dimethyl Phthalate	lb.	.23½	.30½
Dimethyl Sebacate	lb.	.65	.67½
"Dinopol" (dms.)	lb.	.43½	.44
Dioctyl Phthalate (dms.)	lb.	.39½	.40
"Dipolymer Oil"	gal.	.33	.38
"Dispersing Oil No. 10"	lb.	.04½	.04¾
"Dutrex A" ("B," "5," "6")	lb.	.02½	.03¾
"15"	gal.	.10	.189
"20," "21," "25"	lb.	—	.03
"Dyal 89"	lb.	—	.45
"Econo-Plast" (drums)	lb.	.03¾	.03¾
"ELA" (dlvd.)	lb.	—	.80
"Estac"	lb.	—	.14½
"Ethox" (dms.)	lb.	.35½	.36
"Flexol DOP"	lb.	.379	.424
"TOF"	lb.	.45	.52
"3GH"	lb.	.55	.60
"3GO"	lb.	.515	.60
"4GO"	lb.	.40	.47
"H-70"	lb.	.56¾	.64½
"Hercolyn" (dlvd.)	lb.	.12	.16
"Herron-H.T."	gal.	.17	.23
"Herron-Plas"	lb.	—	.03½
"Herron-Wax"	lb.	—	.04½
"HT-300"	lb.	.45¾	.53

PLASTICIZERS & SOFTENERS (Cont'd)

"Indonex 633½" ("634½, 638½, 639½")	gal.	.11½	.16
"VG" (dlvd.)	lb.	—	.17
"Indopol H-300" (bbls.)	gal.	1.28	1.32
"JMH"	lb.	—	.65
"Kapsol" (dms.)	lb.	.50½	.51
"KP 23" (dms.)	lb.	.48½	.49
"70" (dms.)	lb.	.39½	.40
"120" (dms.)	lb.	.59½	.60
"140" (dms.)	lb.	.49½	.50
"150" (dms.)	lb.	.41½	.42
"Kronisol" (drums)	lb.	.35½	.36
"Kronitex" (drums)	lb.	.31½	.32
Lanolin, Tech., Anhydrous	lb.	.20	.26
Lead Oleate	lb.	.16½	.42
"Lindol" (drums)	lb.	—	.25½
2-Mercaptoethanol (drums)	lb.	—	.75
"Methox" (dms.)	lb.	.35½	.36
Methyl Oleate	lb.	—	.20
Methyl Stearate	lb.	—	.34
"Monoplex DBS"	lb.	.90	.91
"Monoplex DOS"	lb.	.84	.85
"5" (dms.)	lb.	.90	.92
"11" (dms.)	lb.	.50	.51
"16" (dms.)	lb.	.45	.46
"Montan Substitute No. 506"	lb.	.425	.435
Montan Wax, Crude	lb.	.50	.55
"Monten Wax" (c.l.)	lb.	.52	.55
"Monty Wax"	lb.	—	.35
"Multi-Plast" (drums)	lb.	.04½	.05
"Naftolen HV" (and "R-100") (drums)	lb.	.11	.12
"Natac"	lb.	.1275	.1650
"LV" and "MV" (drums)	lb.	.05¼	.05¾
"Neolene 210" (t.c.)	lb.	—	.16
"212" (t.c.)	lb.	—	.14
"220" (t.c.)	lb.	—	.15
"Nerium"	lb.	—	.09
"Nevillac Resins" (drums)	lb.	.23	.45
"Neville Resins" (drums)	lb.	.09	.14½
"Nevindene Resins" (drums)	lb.	.11½	.14½
"Nevinol" (drums)	lb.	—	.16
"Nevoll"	lb.	.03	.04
"Nevtex 10" (drums)	lb.	—	.08½
"Nuba 1" (and "2") (drums)	lb.	—	.03½
"3X" (drums)	lb.	—	.05
"15 (and 30) Oil" (drums)	lb.	—	.17¾
"781 Oil" (drums)	lb.	—	.22
"No. 480 Oil Proof Resin"	lb.	—	.15
"Opalwax"	lb.	—	.45
Ortho-Nitrobiphenyl	lb.	.06	.11
"Ozokerite Wax No. 64 White"	lb.	.31	.32
"Yellow"	lb.	.25	.26
"P-1" (and "4, 6, 8, 20")	lb.	.26½	.33
"P-75"	lb.	.66	.72
"Pale 4" (and "1000")	lb.	—	.17¼
Palm Oil	lb.	—	.11
"Paradene Resins" (drums)	lb.	.05½	.06½
"Para Flux" (drums)	gal.	—	.19
"2016" (l.c.l.)	gal.	—	.20
"Para Lube" (l.c.l.)	lb.	—	.048
"Paraplex G-25"	lb.	.90	.91
"G-40"	lb.	.48¾	.49¾
"Parmo"	lb.	.06	.13½
"Paroil 143"	lb.	—	.09¾
"170, Powdered"	lb.	—	.18
"Pentalene 90" (l.c.l., dms.)	lb.	—	.17
"92" (l.c.l., drums)	lb.	—	.25
"Pentaphen No. 114" (l.c.l., bags)	lb.	—	.23
"Pepton 22"	lb.	.70	.75
"PG-16" (drums)	lb.	—	.34
"Philplast No. 1"	gal.	.18	.35
"No. 2"	gal.	.13	.35
"Picco 10" (and "25")	lb.	—	.11
"75" (and "100")	lb.	—	.10½
"S.O.S."	gal.	.29	.34
"Piccocizer 30"	lb.	.05½	.06
"D"	lb.	—	.10
"Piccolastic A" (and "B, C, D, E")	lb.	.20	.20½
"F"	lb.	.12½	.13
"Piccolyte S Resins"	lb.	.17	.20½
"Piccoumaron Resins"	lb.	.05½	.13½
"Piccovar"	lb.	.08¾	.10¼
"Piccovol"	lb.	.02	.02¾
"Pictar"	gal.	.18	.23
"Plas-Blend 360"	lb.	.02½	.03
"Plastac M"	lb.	—	.09½
"Plasticizer 3"	lb.	.12	.14
"Plasticizer No. 7-2"	lb.	—	.60
"No. 11-2"	lb.	—	.32
"Plasticizer No. 1889"	lb.	—	.565
"No. 1919"	lb.	—	.52
"No. 2069" (l.c.l.)	gal.	—	.23
"No. 2070" (l.c.l.)	gal.	—	.30
"Plasticizer ODN" (Tech.)	lb.	.30	.357
Purified	lb.	.36	.417
"Plasticizer SC"	lb.	—	.75
"Plasticizer VA-1"	lb.	.33	.35
"Plastoflex 50"	lb.	.36	.37
"J-21"	lb.	—	.41
"Plastogen"	lb.	.07¾	.08
"Plastolein X-55" (dms.)	lb.	—	.60
"X-148" (dms.)	lb.	—	.70
"Plastone"	lb.	.27	.30
"Polymel D"	lb.	—	.20
"Polymel Liquid"	gal.	.12	.17
"Polymel Resins"	lb.	.029	.05
"PT 400" ("600," "800") (c.l., dms.)	gal.	.30	.39
"Refrigerator Oil 145-R"	gal.	—	1.25
"Reogen"	lb.	.11½	.12
"465 Resin" (drums)	lb.	—	.04½

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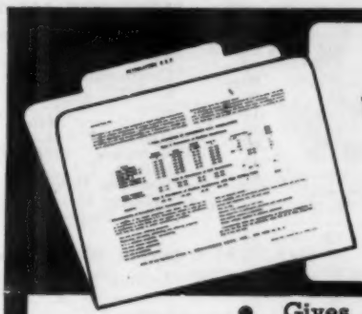

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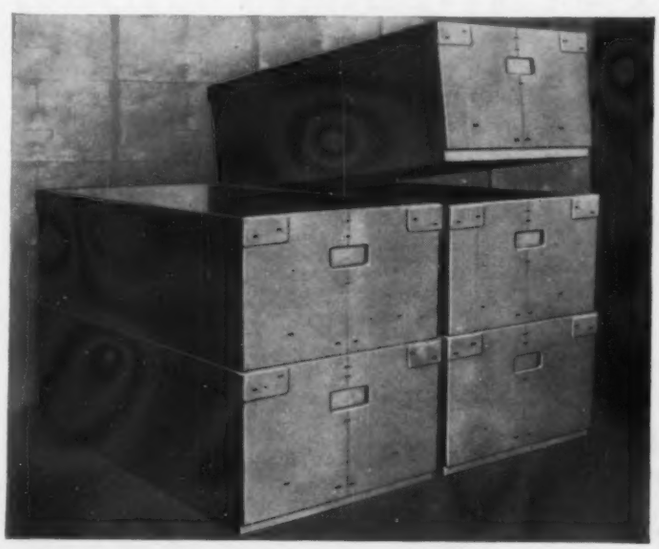

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PLASTICIZERS & SOFTENERS (Cont'd)

"Resin 731"	lb.	——	.13¾
"Resin C"	lb.	.015	.021
"Resinex"	lb.	.02¾	.03¼
"L-4"	lb.	.01¾	.02½
"Ridbo 369" (drums)	lb.	.08	.09
"369-F" (drums)	lb.	——	.12
Rosin Oil	gal.	.54	1.20
"R.P.A. No. 2" (dlvd.)	lb.	——	.65
"No. 3"	lb.	——	.46
"No. 4" (dlvd.)	lb.	——	.80
"No. 5" (dlvd.)	lb.	——	.57
"R.S.O. Softening Oil"	lb.	.02½	.03
"Rubtar"	gal.	——	.40
"Santicizer B-16"	lb.	.50	.57
"E-15"	lb.	.47	.54
"M-17"	lb.	.44	.51
"No. 140"	lb.	.31	.38
"Softener No. 20"	gal.	.09	.25
"S.P.C."	lb.	——	.19½
"Stanolind Petrolatum"	lb.	.032	.069
"Wax"	lb.	.25	.30
"Staybelite Resin" (dms.)	lb.	——	.11
"Sunny South" Burgundy Pitch	cwt.	8.91	9.55
"Sunny South" Pine Tar	gal.	.30	.41
"Sunny South" Rosin Oil	gal.	.50	.67¾
"Superla Wax"	lb.	.23	.28
"Syncera Wax"	lb.	.16	.21
"Synplasticizer"	lb.	——	.10
"Syn Tac" (c.l.)	gal.	——	.33
"Synthol"	lb.	——	.22½
Tar, Refined	gal.	.10	.15
"K-Tarnel NR" (t.c.)	lb.	——	.0851
"Terpene A"	gal.	——	.65
"TP-90B" (and "TP-95")	lb.	.65	.75
"TP-99	lb.	.60	.70
Triacetin	lb.	.34	.45
Tricresyl Prosphate	lb.	——	.33½
"Turgum S"	lb.	.11½	.13
"Vanadiset A" (to "F")	lb.	.0165	.05
"Pulverized"	lb.	.08½	.31
"Solution"	gal.	.40	.65
"Vistac No. 1"	gal.	——	1.32
"No. 2"	gal.	——	1.66
"No. 4"	gal.	——	1.80
"Wilcor-Plast"	lb.	.02½	.02¾
"Witresin"—Granular	ton	41.00	43.00
Solid	ton	36.00	38.00

PROCESSING AIDS

Castor Oil, Processed (dms.)	lb.	——	.17¾
Refined (drums)	lb.	——	.15¾
"Castorwax" (min. 400 lbs.)	lb.	——	.25
"Dutrex 7"	lb.	.02½	.03¾
"30"	gal.	.24	.27
"ELA" (dlvd.)	lb.	——	.80
"Resin No. 510"	lb.	——	.16
"Wilmac D-X"	lb.	.15	.16½
"Zeton" (dms.)	lb.	——	.32

PROTECTIVE & STABILIZING AGENTS

"Agchem SA-9" (to "SA-12")	lb.	.65	1.02
"Alpha Protein"	lb.	.28	.32
"Aroostoocrat"	lb.	——	.07½
Acacia	lb.	.12¾	.21
Carob Bean Flour	lb.	.42	.50
Casein	lb.	.33	.40
Ethylene Diamine 68%	lb.	.57	.58
Karaya Gum	lb.	.36	.45
"Prosein"	lb.	.071	.09
"Rex Compound No. 2801"	lb.	——	.15
Sodium Alginate	lb.	——	1.50
"Stablex B"	lb.	——	.95
Tragacanth Flakes	lb.	.60	1.35

RECLAIMING AGENTS

"1-D Heavy Oil" (drums)	lb.	.04	.05
"No. 517 H.B. Oil"	gal.	.11½	.16½
"535"	gal.	.22	.27
"No. 523 H.S. Oil"	gal.	.22	.27
"C-6 Oil" (and "28," "32")	gal.	.33	.38
"C-10 Oil"	gal.	.21	.25
"C-33 Oil"	gal.	.19	.24
Caustic Soda—Flake 76% (c.l., drums)	cwt.	——	2.90
Liquid 50% (t.c.)	cwt.	——	2.00
Solid 76% (c.l., drums)	cwt.	2.50	2.75
Cresylic Acid (99-100%)	gal.	——	.95
"D-4"	gal.	.19	.24
"E-5"	gal.	.17	.22
Heavy Aromatic Naphtha (t.c.)	gal.	——	8.25
"LX-83 Reclaiming Solvent"	gal.	.13	.21
"LX-572 Reclaiming Oil"	gal.	.19	.28
"PT 75" (and "101")	gal.	.30	.39
"PT 150 Solventene"	gal.	.60	.75
"Q Oil"	gal.	.206	.256
"Reclaiming Oil 1621"	lb.	.02	.02¼
"Reclaiming Reagent No. 3"	lb.	.12	.15
"Reclaiming Resin No. 1"	gal.	.15	.35
"R.P.A. No. 3" (dlvd.)	lb.	——	.46
Soda Ash (c.l., bags)	cwt.	——	1.20
"Solvent 534"	gal.	.22	.27
"Solvent Oil 21"	gal.	——	.24
"Wilcor Reclaiming Oil No. 111" (drums)	gal.	.28	.32
"No. 151" (drums)	gal.	.28	.32
"X-1 Resinous Oil"	lb.	.0135	.02
"X-63 Solvent"	gal.	.20	.28

REINFORCING AGENTS—CARBON BLACK

Channel, Hard Processing (HPC) (bags)

"Atlantic HPC-98"	lb.	.064	.102
"Continental F"	lb.	.0632	.1025
"Croflex"	lb.	.0632	.1025
"Crow"	lb.	.0632	.1025
"Dixiedensed" (and "S")	lb.	.0632	.1025
"Huber HX"	lb.	.0632	.1050
"Kosmobile" (and "S")	lb.	.0632	.1025
"Kosmos T"	lb.	.0632	.1025
"Micronex HPC"	lb.	.0632	.1025
"Spheron 4"	lb.	.0632	.102
"Witco Disperso No. 6"	lb.	.0632	.1025

Channel, Medium Processing (MPC) (bags)

"Atlantic MPC-95"	lb.	.064	.102
"Continental A"	lb.	.0632	.1050
"Croflex TH"	lb.	.0632	.1025
"Dixie R-1"	lb.	.0632	.1025
"Dixiedensed HM" (and "S-66")	lb.	.0632	.1025
"Huber TX"	lb.	.0632	.1050
"Kosmobile HM" (and "S-66, SMG")	lb.	.0632	.1025
"Kosmos M"	lb.	.0632	.1025
"Micronex Standard"	lb.	.0632	.1025
"Spheron 6"	lb.	.0632	.102
"Witco Disperso No. 1"	lb.	.0632	.1025

Channel, Easy Processing (EPC) (bags)

"Atlantic EPC E-42"	lb.	.064	.102
"Collocarb"	lb.	——	.065
"Continental AA"	lb.	.0632	.1025
"Croflex 77"	lb.	.0632	.1025
"Dixiedensed 77"	lb.	.0632	.1025
"Kosmobile 77"	lb.	.0632	.1025
"Micronex W-6"	lb.	.0632	.1025
"Spheron 9"	lb.	.0632	.102
"Witco Disperser No. 12"	lb.	.0632	.1025
"Wyex"	lb.	.0632	.105

Channel, Conductive (CC) (bags)

"Dixie 5"	lb.	.0740	.1175
"Kosmink"	lb.	.0740	.1175
"Spheron C"	lb.	.08	.12½
"I"	lb.	.066	.111
"N"	lb.	.18½	.25
"Voltex"	lb.	.15	.18½

Furnace, High Elongation (HEF) (bags)

"Sterling K"	lb.	.05	.09

Furnace, High Modulus (HMF) (bags)

"Continex HMF"	lb.	.05	.09
"Dixie 40"	lb.	.05	.09
"Kosmos 40"	lb.	.05	.09
"Modulex"	lb.	.05	.09
"Philblack A"	lb.	.05	.06
"Statex 93"	lb.	.05	.09
"Sterling L"	lb.	.05	.09

Furnace, Semi-Reinforcing (SRF) (bags)

"Continex SRF"	lb.	.03½	.07½
"Dixie 20"	lb.	.03½	.07½
"Essex"	lb.	.03½	.07½
"Furnex"	lb.	.03½	.07½
"Gastex"	lb.	.03½	.07½
"Kosmos 20"	lb.	.03½	.07½
"Pelletex"	lb.	.03½	.07½
"Seminex"	lb.	.03½	.05½
"Sterling R"	lb.	.03½	.07½
"Sterling S"	lb.	.03½	.07½

Furnace, Fine (FF) (bags)

"Statex B"	lb.	.05¾	.09¾

FURNACE, MISCELLANEOUS

"Philblack O"	lb.	.07	.08

Thermal, Fine (FT) (bags)

"P-33" (c.l.)	lb.	——	.05

Thermal, Medium (MT) (bags)

"Thermax" (c.l.)	lb.	——	.03

REINFORCING AGENTS—MISCELLANEOUS

"Darex Copolymer No. 3"	lb.	.39½	.42
"No. X34"	lb.	.39½	.42
"Darex Copolymer Latex No. 3 (and "X34")	lb.	.44½	.50
"Durez 12687" (and "12707")	lb.	.27½	.29
"Marbon B"	lb.	.65	.75
"S" and "S-1"	lb.	.41	.48
"Marmix"	gal.	1.35	1.75
"Naftex EPC"	lb.	.08¼	.11¼
"HMF"	lb.	.06½	.09
"MPC"	lb.	.08¼	.11¼
"SRF"	lb.	.05½	.07½
"Wilcorite R Resins"	lb.	.29	.35

RETARDERS

"E-S-E-N"	lb.	.34	.36
"Retardac 15A"	lb.	.15	.16½
"Retardex"	lb.	——	55

RUBBER SUBSTITUTES

Mineral Rubber

"38"	ton	26.00	32.50
"Black Diamond"	ton	26.00	27.50
"Byerlyte"	ton	36.00	50.00
Gilsonite, Selects (c.l.)	ton	33.50	34.50
"Hard Hydrocarbon" (dms.)	ton	32.00	34.00
"Herron Flake"	ton	40.00	42.00
Mineral Rubber, Granulated	ton	30.00	35.00
Solid	ton	27.00	32.00
"Parmr" (drums)	ton	26.00	30.00
"Pioneer"	ton	33.00	60.00

Vulcanized Vegetable Oils (Factice)

"Amberex"	lb.	.27	.38
Brown	lb.	.18	.38
Dispersed	lb.	.28	.49
"Neophax"	lb.	.20	.38
White	lb.	.13	.39

Miscellaneous Rubber Substitutes

"Gilsowax"	lb.	.04½	.05
"Insulac"	lb.	.06	.06½
"Resin No. 1098" (drums)	lb.	——	.42
"No. 1198"	lb.	.31	.35
"Wilmex M-4" (and "M-6")	lb.	.05½	.06

SOLVENTS

Acetone (dlvd.)	lb.	.07½	.09½
"American" Dipentene	gal.	.45	.46
"Amsco" Lactol Spirits (t.c.)	gal.	——	.13
"Rubber Solvent" (t.c.)	gal.	——	.12½
"Solv A" (t.c.)	gal.	——	.18
"Solv B" (t.c.)	gal.	——	.19½
"Special Napthalite" (t.c.)	gal.	——	.12½
"Textile Spirits" (t.c.)	gal.	——	.13
Amyl Chlorides, Mixed (l.c.l.) (drums)	lb.	——	.08
Benzol 90%	gal.	.17	.24
Butyl Acetate (t.c.)	lb.	——	.198
Butyl Alcohol (t.c.)	lb.	——	.206
Secondary (dlvd.)	lb.	.09½	.11½
Tertiary (dlvd.)	lb.	.12	.14
Carbon Bisulfide, Tech.	lb.	.05	.08
Carbon Tetrachloride	gal.	——	.80
Cyclohexane	lb.	.08	.10
Cyclohexanone	lb.	.25	.27 a
Diacetone, Pure (dlvd.)	lb.	.12	.14
Dichlorethyl Ether (drums)	lb.	.16	.17
Formal (drums)	lb.	.26	.27
Dichloropentane (l.c.l.)	lb.	——	.04½
"Dipentene 122" (dms.)	gal.	.68	.70
Ethyl Alcohol (t.c.)	gal.	.53½	.55¼
Ethylene Dichloride (drums, dlvd.)	lb.	.08	.09
"Halowax Oil"	lb.	.27	.30
Heptanes (t.c.)	gal.	——	.15
"Hexalin Cyclohexanol"	lb.	.20	.22 a
Hexanes (t.c.)	gal.	——	.15⅜
Isopropyl Alcohol, Ref. 99% (dlvd.)	gal.	.40½	.53
Ether, Ref. (dlvd.)	lb.	.04½	.06½
Mesityl Oxide (dlvd.)	lb.	.11½	.13½
Methanol (dms., dlvd.)	gal.	.37	.44
Methyl Acetone, Syn. (drums, dlvd.)	gal.	.46	.52
Methyl n-Amyl Ketone (drums)	lb.	.29	.30
Methyl Ethyl Ketone	lb.	.09	.11
Methyl Isobutyl Ketone (dlvd.)	lb.	.12½	.14½
"N-5" Pentane Mix. (t.c.)	gal.	——	.06½
"N-6" Hexanes (t.c.)	gal.	——	.11⅛
"N-7" Heptanes (t.c.)	gal.	——	.10½
"Petrolene" (t.c.)	gal.	——	.10⅛
Picolines, Alpha, Refined	lb.	.245	.25
Mixed	lb.	.24	.25
Pyridine, Refined	lb.	.55	.55½
Quinoline	lb.	.32	.32½
"Rubber Solvent" (t.c.)	gal.	——	.12½
"Rubsol" (t.c.)	gal.	——	.08625
"Skellysolve B" (Hexanes) (t.c.)	gal.	——	.118
"C" (Heptanes) (t.c.)	gal.	——	.11
"E" (Octanes) (t.c.)	gal.	——	.13
"R" (Solvent Naphtha)	gal.	——	.088
"Solvenol"	gal.	.54	.63
Solvent, Crude, Light	gal.	.19	.28
"Solvesso 100" (t.c.)	gal.	——	.2812
"150" (t.c.)	gal.	——	.2812
"Sunny South" Dipentene	gal.	.45	.46
Toluene (drums)	gal.	——	.28
Toluol (t.c.)	gal.	——	.23
Trichlorethane	lb.	.11	.12
Triglycol Dichloride (drums)	lb.	——	.49
"Tromex"	lb.	.078	.083
"X-7" Sp. Heptanes (t.c.)	gal.	——	.10
"X-8-A Solvent Naphtha"	gal.	——	.07¾
Xylene (drums)	gal.	——	.28

STABILIZING AGENTS (for Vinyl Resins)

"Dutch Boy DS-207"	lb.	——	.42
"Plumb-O-Sil A"	lb.	——	.26
"Tribase"	lb.	——	.22¼
Lead Stearate, Precip.	lb.	.55	.57
Fused	lb.	.60	.62
"Stabelan A"	lb.	.55	.65
"Stabilizer JCX"	lb.	——	.45
"SN"	lb.	.36	.42
"V-1-N"	lb.	.44	.50
"V-9"	lb.	——	.85
"Vanstay"	lb.	.38	.40

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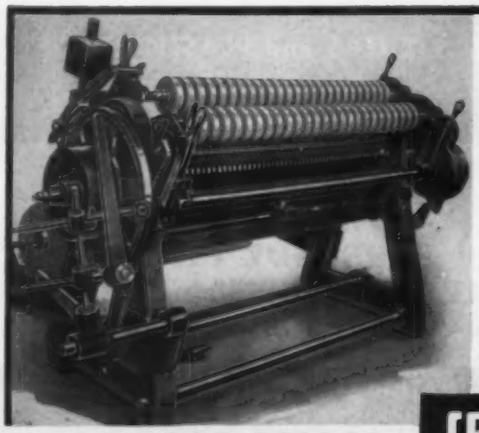

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SUN CHECKING AGENTS

"Antisol"	lb.	.23	.24
"Heliozone" (dlvd.)	lb.	.23	.24
"Sunproof"	lb.	.23	.24
"Jr."	lb.	.17	.18
"Tonox"	lb.	.50	.52

TACKIFIERS

"Advaresin 100"	lb.	.14½	.15
"Agchem RC 30"	gal.	.65	1.34
"Amberol ST-137X"	lb.	.33	.33½
"Beckopol 1400"	lb.	.27	.28
"Dutrex 44"	gal.	——	.919
"E-510 Resin Emulsion"	lb.	——	.14
"Galex"	lb.	.13¼	.25
"Koresin"	lb.	.40	.52
"Lindol Emulsion" (drums)	lb.	——	.27
"Liquid Rubber Flux"	lb.	——	.125
"Nevilloid C-55" (drums)	lb.	——	.12
"Pentacizer 344"	lb.	——	.20
"Pentalyn Resins" (dlvd.)	lb.	.14¼	.21
"Resin V"	lb.	——	.25¼
"Rubtack"	lb.	——	.12
"Staybelite Esters" (dlvd.)	lb.	.15	.23¾
"Super-Beckacite No. 1001"	lb.	.37	.38
"Wilcorite R-30"	lb.	——	.40

THICKENERS (FOR LATEX)

"Acrysol GS"	lb.	.14½	.22
"Betanol" (drums)	lb.	——	.70
"Emulsorex No. 5"	lb.	——	.35
Propylene Laurate (drums)	lb.	——	.36
Sodium Silicate	lb.	.01	.02

VULCANIZING AGENTS

Selenium

"Vandex"	lb.	——	2.00

Sulfur

"Crystex" (l.c.l.)	lb.	.32	.35
"Dispersed Sulfur"	lb.	——	.09
"No. 2"	lb.	.08	.12
"Devil" (c.l.)	cwt.	——	1.35
"Insoluble Sulfur 60"	lb.	——	.16
"Star" (c.l.)	cwt.	——	1.85
"Tire"	cwt.	1.35	2.15
"Tube" (c.l., dlvd.)	cwt.	——	2.60

Tellurium

"Latex Telloy"	lb.	——	1.75
"Telloy"	lb.	——	2.00

Miscellaneous Vulcanizing Agents

"VA-3"	lb.	.55	.65
"Vultac No. 1"	lb.	.38	.45
"No. 2"	lb.	.38	.45
"No. 3"	lb.	.42	.49

WASHING & FINISHING AGENTS

"Apcolene" (t.c.)	gal.	——	.09½

WETTING AGENTS

"Advawet No. 15"	lb.	——	.18¼
"No. 33"	lb.	.40	.43
"Aerosol OT 70% Clear"	lb.	.80	1.00
"Agchem SA-15" ("16, 18")	lb.	.17	.29
"Alrosol" (dms.)	gal.	——	.48
"Aquarex BBX Conc." (dlvd.)	lb.	——	.78
"D" (dlvd.)	lb.	——	.75
"ME" (dlvd.)	lb.	——	.90
"NS" (dlvd.)	lb.	——	.90
"NS" (dlvd.)	lb.	——	.75
"Areskap 50"	lb.	.30	.38
"Dry 100"	lb.	.60	.72
"Aresket 240"	lb.	.30	.38
"Dry 300"	lb.	.60	.72
"Aresklene 375"	lb.	.42	.57
Pulverized	lb.	——	.06
"Dry 400"	lb.	.70	.84

Lecithin	lb.	——	.26
"Santomerse D"	lb.	.43	.65
"S"	lb.	.13	.25
"Sorbit P"	lb.	——	.28
"Stablex G"	lb.	——	.70
"Triton K-60"	lb.	33½	.41
"N-100"	lb.	.59½	.67
"R-100"	lb.	.14½	.25
"720"	lb.	.30½	.38
"770"	lb.	.21¾	.29¼
"Vultamol"	lb.	——	.17½

MISCELLANEOUS CHEMICALS

"Acto 450" ("550-W," "600," "630")	lb.	.109	.145
"Agchem SA-17"	lb.	——	.29
"Aquarex SMO" (dlvd.)	lb.	——	.50
"A.S.T.M. Oil No. 1" (and "No. 3")	gal.	1.00	1.15
"Black Shield 4701"	lb.	——	.21
"Copper Inhibitor X-872-L"	lb.	——	1.50
2-Ethylhexanol (dms., dlvd.)	lb.	.25	.26
Glycerine, 88% Sap., Crude (dlvd.)	lb.	.23½	.24
"Hydrozo"	lb.	——	.51
"MODX" (tons)	lb.	——	.29½
"Para Resin No. 1784"	lb.	——	.09¾
"No. 2457" (c.l.)	lb.	——	.04
"No. 2718" (c.l.)	lb.	——	.04
"pHR"	lb.	——	1.25
"Resin No. 1226"	lb.	.31½	.36½
Resorcinol (dlvd.)	lb.	——	.64
"Rio Resin"	lb.	.43	.45
"Santocel"	lb.	——	.50
"Sublac"	lb.	.31	.34
"Synpep N" (drums)	lb.	——	.54
"Thiokol LP-2"	lb.	——	.85
"LP-3"	lb.	——	.95
"Tysonite"	lb.	.21½	.22¼
"Vinsol Resin"—Lumps	lb.	——	.06

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INDEX TO ADVERTISERS

A

Adamson United Co. 16, 17
Adhesive Products Corp. 113
Advance Solvents & Chemical Corp. 46, 117
Agawam Chemicals, Inc. ..... —
Akron Standard Mold Co. ..... —
Albert & Son, L. 116
Amecco Chemicals, Inc. ..... —
American Anode Inc. ..... —
American Cyanamid Co.
Calco Chemical Division 23
Industrial Chemicals Division ..... —
American Zinc Sales Co. ..... —
Armour and Company 111
Astlett, H. A., & Co. 107
Atlas Electric, Devices Co. 95

B

B. B. Chemical Co. 34
Baird Rubber and Trading Co. 107
Baker Chemical Co., J. T. 25
Barrett Div. Allied Chemical & Dye Corp. .. 14
Bassett, W. E. Co. 117
Beacon Co. 35
Benson Process Engineering Co. 37
Bestread Products Co. 117
Binney & Smith Co. ..... Insert Following 64
Black Rock Mfg. Co. 96
Bonwitt, Eric ..... —
Brockton Cutting Die & Machine Co. 113
Brown Co. ..... —

C

Cabot, Godfrey L., Inc. 85
Caldwell Co., The ..... —
Cambridge Instrument Co. ..... —
Cameron Machine Co. 113
Carbide & Carbon Chemicals Corp. 7
Carey, Philip, Mfg. Co. 113
Carter Bell Mfg. Co., The 103
CLASSIFIED ADVERTISING 115, 116, 117
Chemical Industries Exposition 102
Cleveland Liner & Mfg. Co. ..... Back Cover
Columbian Carbon Co. ..... Insert Following 64
Connor, Charles F., & Co., Inc. ..... —
CONSULTANTS SECTION 117
Continental Carbon Co. ..... Insert Opposite 41
Continental Machinery Co. 117
Convoy, Incorporated 111

D

Dewey and Almy Chemical Co. 98
Dow Corning Corp. 93
Du Pont de Nemours & Co., E. I.
Inside Front Cover

E

Emerson Apparatus Co. ..... —
English Mica Co. 114
Enjay Co., Inc. 89
Erie Engine & Mfg. Co. 101

F

Farrel-Birmingham Co., Inc. 13
Firestone Tire & Rubber Co. 15
Flintkote Co., The 45
Fricke Co., J. E. ..... —

G

G. & V. Machine Co. ..... —
Gammeter, W. F., Co. 113
General Atlas Carbon Co. 20
General Chemical Co. 20
General Latex & Chemical Corp. ..... —
General Magnesite & Magnesia Co. ..... —
Genseke Brothers ..... —
Gidley, Philip Tucker 117
Goodrich, B. F., Chemical Co. (Chemicals) 6
Goodrich, B. F., Chemical Co. (Geon) 5
Goodrich, B. F., Chemical Co. (Hycar) 3
Goodyear Tire & Rubber Co. 9
Grant Engineering Co. 117

H

Hall Co., The C. P. 87
Harwick Standard Chemical Co. 27
Hercules Powder Co., Inc. ..... —
Herron Bros. & Meyer ..... —
Heveatex Corporation ..... —
Hoggson & Pettis Mfg. Co. 111
Howe Machinery Co., Inc. 117
Huber, J. M., Corp. 48

I

Independent Die & Supply Co. 114
Industrial Ovens, Inc. 44
Interstate Welding Service 91

J

Jacoby, Ernest & Co. ..... —
Java Latex & Chemical Corp. ..... —
Johnson Steel & Wire Co., Inc. 114

K

Keasbey & Mattison Co. 30

L

Lambert Co., E. P. 107
Leatherman, L. F. ..... —
Littlejohn Co., Inc. 105

M

M & N Machine Tool Works 97
Magnetic Gauge Co. 94
Marbon Corp. 105
P. W. Martin Gordon Clays Inc. ..... —
Maryland Cork Co. ..... —
McNeil Machine & Engineering Co. ..... —
Mercer-Robinson Mfg. Co. 100
Meyer & Brown, Inc. ..... —
Monsanto Chemical Co. 29
Mt. Vernon-Woodbury Mills, Inc. ..... —
Muehlstein & Co., H., Inc. 42
Mumper, James F., Co. 117

N

National Lead Co. 38
National Rosin Oil & Size Co. 114
National Rubber Machinery Co. ..... —
National Sherardizing & Machine Co. 114
National Standard Co. ..... —
Naugatuck Chemical, U. S. Rubber Co. 50
Neville Co. 31
New Jersey Zinc Co. 28
Norris Mfg. Co. ..... —

O

Olin Laboratories, The R. R. 117

P

Pennsylvania Industrial Chemical Corp. 19
Pequanoc Rubber Co. ..... —
Phillips Petroleum Co. 4
Pittsburgh Plate Glass Co., Columbia Chemical Div. 47
Polymel Corporation ..... —
Precision Scientific Co. ..... —
Preco Incorporated ..... —
Preventive Maintenance Co. ..... —
Procter & Gamble ..... —

R

Ralphs-Pugh Co., Inc. ..... —
Rand Rubber Co. ..... —
Randall, Frank E., Co. ..... —
Rare Metal Products Co. 114
Reliable Welding & Machine Shop 116
Resinous Products & Chemical Co. 41
Revertex Corp. of America ..... —
Robinson Mfg. Co. 100
Rohm & Haas Co. ..... —
Royle & Sons, John 101

S

St. Joseph Lead Co. ..... —
Schrader's Son, A. ..... —
Schulman, A., Inc. ..... Inside Back Cover
Scott Testers, Inc. 113
Sharples Chemicals Inc. ..... Insert Following 20
Shell Oil Co., Inc. ..... —
Simplex Cloth Cutting Machine Co., Inc. .. 96
Skelly Oil Co., Solvents Div. 10
Snell, Foster D., Inc. 117
Sonneborn Sons, L., Inc. 111
South Asia Corp. 107
Spadone Machine Co. 100
Stabelan Chemical Co. 109
Stamford Rubber Supply Co. 118
Standard Oil Co. (Indiana) 33
Stauffer Chemical Co. 102
Stein, Hall & Co., Inc. 26
Stern Can Co. 116
Sun Oil Co. ..... —

T

Tanney-Costello Co. ..... —
Taylor Instrument Companies 24
Texo Corporation 99
Textile Proofers, Inc. ..... —
Thropp & Sons, William R. ..... —
Titanium Pigment Corp. 8
Trade News Service 109
Turner Halsey Co. ..... —

U

Union Bay State Chemical Co. ..... —
Union Carbide & Carbon Corp. 7
Union Pacific Railroad 32
United Carbon Co. ..... Insert Following 10
United Engineering & Foundry Co. 43
United Rubber Machinery Exchange ..... —
U. S. Rubber Reclaiming Co. ..... —
Utility Mfg. Co. 97

V

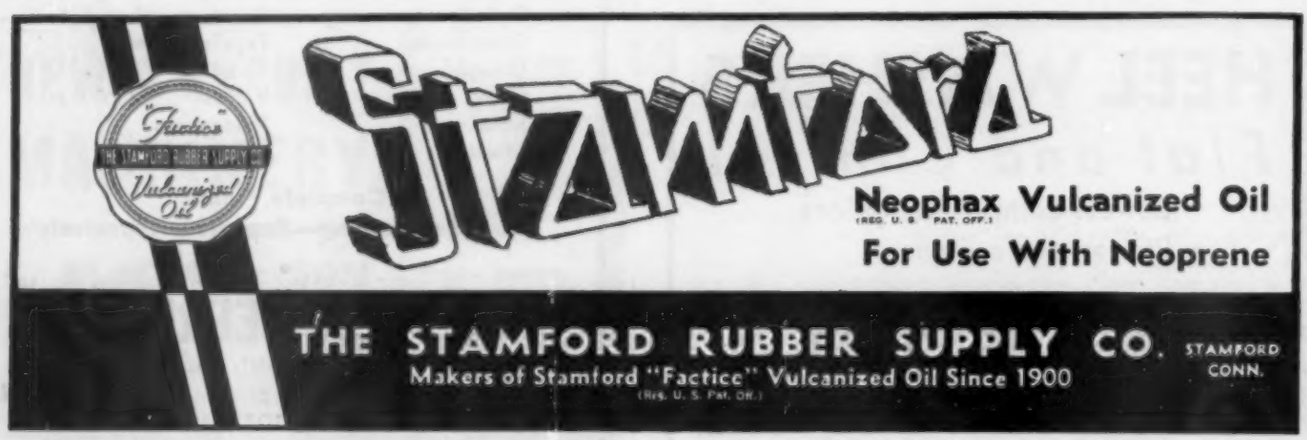
Vanderbilt, R. T., Co. ..... Front Cover

W

Wallace, M. E., Co. 109
War Assets Administration 18
Warwick Chemical Co. 105
Weber, Hermann & Co., Inc. 107
Westinghouse Electric Corp. ..... —
White, J. J., Products Co. ..... —
Whittaker, Clark & Daniels, Inc. ..... —
Williams, C. K., & Co. 113
Wilson, Charles, T., Co., Inc. 109
Witco Chemical Co. ..... Insert Following 38
Wood, R. D., Co. ..... —

X

Xylos Rubber Co. 15



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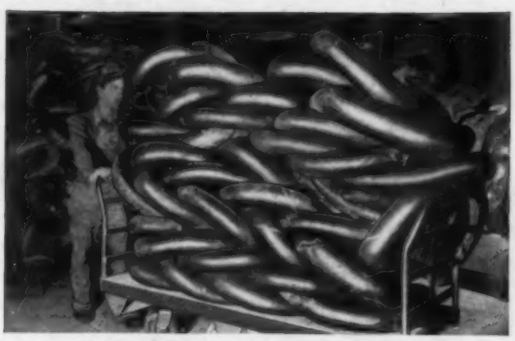

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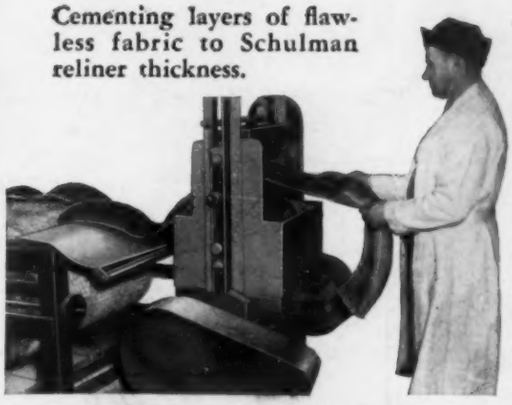

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